



M1 DUNDALK WESTERN BYPASS

SITE 101: LITTMILL 1
CHAINAGE 17.450 – 17.540
NGR: 302783/305249

FINAL REPORT

ON BEHALF OF
LOUTH COUNTY COUNCIL and the
NATIONAL ROADS AUTHORITY

LICENSEE: BRIAN Ó DONNCHADHA
LICENCE NUMBER: 02E1752

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IAC Irish Archaeological
Consultancy

NON-TECHNICAL SUMMARY

Irish Archaeological Consultancy Ltd. (IAC), funded by Louth County Council and the National Roads Authority undertook an excavation in the townland of Littlemill c.2km to the south east of Dundalk in advance of the construction of the Dundalk Western Bypass (DWB) (Figure 1).

The archaeological excavations followed a detailed programme of archaeological test trenching carried out in order to define the location, nature and extent of potential archaeological remains along the route of the Dundalk Western Bypass. Site 101 at Littlemill 1 was identified during archaeological test trenching.

Resolution excavation of Site 101, Littlemill 1 was completed between Chainage 17.450–17.540 (NGR 302783/305249). Topsoil stripping of the area commenced on November 18th 2002 with a team of one Supervisor and four Assistant Archaeologists. The fieldwork was completed on December 4th 2002. Archaeological fieldwork was directed by Brian O' Donnchadha of Irish Archaeological Consultancy Ltd (IAC Ltd). The excavation of the site revealed two possible structures and a number of other pits and stakeholes. Flakes of worked flint and sherds of Early and Middle Neolithic pottery were recovered from Site 101 indicating at least two phases of Neolithic activity.

ACKNOWLEDGEMENTS

The archaeological excavation at Site 101, Littlemill 1, County Louth was carried out on behalf of Louth County Council and the National Roads Authority in advance of the construction of the M1 Dundalk Western Bypass.

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CONTENTS

NON-TECHNICAL SUMMARY

ACKNOWLEDGEMENTS

List of Figures

List of Plates

1	INTRODUCTION	1
1.1	Site location	1
1.2	The scope of the project	1
1.3	Circumstances and dates of fieldwork	2
2	ARCHAEOLOGICAL AND HISTORICAL BACKGROUND	3
2.1	Prehistoric Period (7000BC - AD500)	3
2.1.1	The Neolithic Period (c.4000BC - c.2500BC)	3
2.1.2	The Bronze Age (c.2500BC - c.500BC)	5
2.1.3	The Iron Age (c.500BC - c.500AD)	6
2.2	Early Medieval Period (AD500-1169)	6
2.3	Medieval Period (AD1169-1700)	7
2.4	Post-medieval (1700-1900)	8
3	THE EXCAVATION	9
3.1	Introduction	9
3.2	Methodology	9
3.3	Legends and Brackets	9
4	EXCAVATION RESULTS	10
	Stratigraphy	10
4.1	Group 1: Natural Drift Geology	10
4.2	Group 2: Building 1 and Associated Features	11
4.3	Group 3: Undated Activity 30m north west of Building 1	16
4.4	Group 4: Features to the south east of Building 1	18
4.5	Group 5: Topsoil	20
4.6	Synthesis	21
5	DISCUSSION	23
5.1	Realisation of original research aims	23
5.2	Conclusions	24
6	BIBLIOGRAPHY	27

Figures

Plates

Appendix 1: Catalogue of Primary Data

Appendix 2: Specialist Reports

Appendix 2.1: Species Identification of Wood Samples

Appendix 2.2: Radiocarbon Dating Report

Appendix 2.3: Lithic Report

Appendix 2.4: Prehistoric Pottery Report

Appendix 2.5: Animal bone report

List of Figures

- Figure 1 Site 101, Littlemill 1 Site location
Figure 2 Extract from RMP map showing location of Site 101, Littlemill 1
Figure 3 Location of Site 101, Littlemill 1 within the Dundalk Western Bypass Road Scheme
Figure 4 Post Excavation Plan of Site 101, Littlemill 1
Figure 5 Site 101, Littlemill 1 Detail of Structure (A) with conjecture of building plan
Figure 6 Site 101, Littlemill 1 Sections of Group 2 (Building and Associated Features)

List of Plates

- Plate 1 General overhead view of Site 101, Littlemill 1 and Site 102, Littlemill 2
Plate 2 Site 101, Littlemill 1, line of postholes with drip gully in the foreground facing south
Plate 3 Site 101, Littlemill 1, line of postholes with packing stones
Plate 4 Site 101, Littlemill 1, general shot facing south

1 INTRODUCTION

This report provides comment and analysis on the excavation carried out in the townland of Littlemill at Site 101, Littlemill 1, c.2km to the southwest of Dundalk, Co. Louth. It was carried out as part of an archaeological mitigation programme associated with the Dundalk Western Bypass (DWB). All archaeological fieldwork was directed by Brian Ó Donnchadha of Irish Archaeological Consultancy Ltd. (IAC Ltd.) and was funded by Louth County Council and the National Roads Authority.

1.1 Site location

The site at Littlemill 1 was located in Littlemill townland (Figure 1), to the north of the R171, c.2km south west of Dundalk (Louth OS sheet number 007). The site is:

- Site 101, Littlemill 1, Excavation Licence 02E1752, route chainage Ch.17.450 – 17.540, NGR 302783/305249.

The site was identified as a result of the archaeological test trenching undertaken by IAC in March 2002 (Licence Ref.: 02E0373). The area comprised an undulating landscape with the sites primarily focused on gently sloping land rather than at the top or bottom of slopes.

1.2 The scope of the project

General

Louth County Council proposed to construct a motorway called the 'Dundalk Western Bypass – Northern Link'. The scheme also included ancillary roads and other structures.

The Dundalk Western Bypass – Northern Link connects the existing Dunleer-Dundalk Motorway, which terminated in the area of the N52 Ardee Road, to the N1 Ballymascanlan Roundabout in an arc situated c.2.5km - 3km to the west and north of Dundalk.

The scheme was divided into two sections. Section 1 (7.8km main centre line chainage (Ch) ran from Ch16.000 to Ch23.870 (the Armagh Road, R177). Work on the southern end of Section 1 was previously commenced so that the main cutting and rough surfacing for the road had been completed to chainage point Ch17.100. The chainage zone Ch16.000 – 17.100 had therefore not been investigated archaeologically under the present contract. Section 2 (2.08km main centre line chainage) ran from the Armagh Road Ch23.870 to the Ballymascanlan Roundabout, Ch25.950.

Therefore the archaeological potential of the route represented a distance of 8.49km (Ch17.100 – 25.950). The route corridor varied between 60m and 200m (not including side roads) and was on average 100m wide. The archaeological site area was thus approximately 85 hectares.

Specific

Three excavations were undertaken in the townland of Littlemill, spread out over a distance of c.450m (see individual reports). The distance between Littlemill 1 and 2 was c.50m, with Littlemill 4/5 located 400m to the north of Littlemill 2.

Background historical research undertaken as part of the EIS and test trenching programme revealed Littlemill townland to contain a site listed in the Record of

Monuments and Places (RMP LH007-071) namely, a double souterrain located c.30m to the east of the fence line at Ch17.640.

An area of approximately 70m x 60m was to be opened up for archaeological resolution at Littlemill 1.

1.3 Circumstances and dates of fieldwork

The excavation was undertaken to offset the adverse impact of road construction on known and potential subsoil archaeological remains in order to preserve this site by record.

Topsoil stripping of Site 101 commenced on Monday the 18th of November 2002 and was completed on the 4th of December 2002. The order and date of the excavation is as follows:

After initial bulk stripping the area of excavation was hand cleaned in order to identify potential archaeological remains. All features were subsequently fully excavated and recorded by hand, using the single context recording system with plans and sections being produced at a scale of 1:50 or 1:20 (sections were recorded generally at 1:10) and photographs where necessary. All works were carried out in agreement with the Project Archaeologist and the National Monuments Section of the Department of the Environment, Heritage and Local Government (formerly *Dúchas*-The Heritage Service). Samples were taken from the charcoal-rich fill of (C75) for species identification and radiocarbon dating analysis.

It was agreed in advance that adequate funds to cover excavation, post-excavation, conservation and dating analysis would be made available by Louth County Council. Dating of the site involved pottery analysis through typological study and radiocarbon analysis. The site archive, and any finds, samples et cetera were kept in safe storage by IAC Ltd during the post-excavation stage.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The following archaeological and historical background refers to the wider archaeological landscape through which the DWB passes.

The town of Dundalk lies at the northern end of Dundalk Bay and is the administrative centre of County Louth, located in the northeast of Leinster. The area spans two geographical areas. To the west the rural landscape surrounding the urban district consists of undulating topography, with low drumlins rising to 30-40m from the coastal plain. As is the case with much of Louth, this covers thick strata of Ordovician and Silurian slates, with some rock outcrops (Gosling 1993, 237) notable. To the east of the urban district, the flat, low lying coastal plain is comprised of recent estuarine and alluvial clays and silts, shaped by the sea level changes following the end of the Ice Age in Ireland c.10000 years ago.

At the time of the earliest habitation in Ireland (Early Mesolithic Period: c.7000BC), the sea submerged the area of the town to a depth of 4-5m, although it continued to retreat to its present level until the Late Neolithic/Early Bronze Age period (c.2400BC), replacing the submerged area with salt marshes and tidal flats. At various stages from the 17th century onwards, these areas were improved by reclamation projects.

The proposed route for the Dundalk Western Bypass–Northern Link is located within an area that avoids the major recorded archaeological monuments in the vicinity. This is a particularly rich archaeological landscape but the great majority of known sites lie beyond the perimeter of the original study area. It is important to note, however, that a significant number of sites in this part of County Louth survive as crop marks, where the above ground indication of the monument has been destroyed. The recognition of such monuments has often been the result of chance discovery from ploughing and construction work, or by observation from the air where the distinctive traces of the buried features can sometimes be observed. The strong tradition of arable agriculture in the locality has been largely responsible for this occurrence.

2.1 Prehistoric Period (7000BC-AD500)

The archaeological record provides evidence that the locality was occupied from the Late Mesolithic period (c.4200 BC), with the excavation of Mesolithic shell midden sites with flint material at Rockmarshall, c.5km northeast of the town of Dundalk.

Above the ground, a large, granite standing stone known locally as *Dealg Fhinn* (LH007-11806) is the only remaining visible reminder of prehistoric occupation of the area. Another standing stone, on the Bellew's Bridge Road, was removed at the beginning of the twentieth century. The pollen record for this area during the prehistoric period indicates that the indigenous forestry was not cleared and replaced by cereals until farming in Ireland was well into its second millennium (3000-2500BC).

2.1.1 The Neolithic (c.4000BC – c.2500BC)

Although we can say with confidence that a substantial Neolithic culture existed in Ireland shortly after 4000BC, which had many similar features with contemporary sites in Britain and West Europe, uncertainty still remains over how the culture arrived in Ireland and how the new economy altered the environment.

The origins of the Neolithic in Ireland are disputed. Pollen records reveal forest clearances occurring before our earliest dated Neolithic sites or monuments; however this may be a reflection that our dating methods are too crude to discriminate between an early and a late Neolithic settlement rather than an indication of the true chronology (Mitchell & Ryan 1997). A debate rages over whether the culture evident in Ireland during the Neolithic was a product of a migrating people into Ireland or an indigenous development. The introduction of certain flora and fauna, management techniques, cultural traits in architecture and domestic crafts with a striking resemblance to those evident in Britain at the time has been suggested by Mitchell & Ryan (1997) to indicate colonisation from Britain.

The vast majority of the archaeological evidence for this period is to be found at the 4-5m (25ft) contour, which reflects the coastline during the maximum post-glacial marine transgression, and it has been suggested that this settlement location would have facilitated the exploitation of the higher ground for farming and the lower ground for summer grazing (Gosling 1993, 242). There is a concentration of Megalithic tombs in the Flurry Valley to the northeast of the Site at Littlemill 1 (with the nearest example located at Faughart Lower (LH004-062), c.6.5km to the north) and scattered throughout the Cooley peninsula. The tomb at Faughart Lower appears to be a small passage tomb with a wedge-shaped chamber and is incorporated into a field boundary. Archaeological discoveries elsewhere on the DWB scheme revealed a possible habitation site from the Late Neolithic/Early Bronze Age Period at Site 115, Newtownbalregan 5 (Bayley, D, forthcoming (c)), located c.3.5km north of Site 101. A collection of pits dating to the Late Neolithic/Early Bronze Age were identified at Site 103, Littlemill 4 & 5 (Ó Donnachadha, B. forthcoming (c)), c.300m north of Site 101 (Littlemill 1) and a number of Neolithic huts with associated pits were excavated at Site 124, Carn More 1 (Delaney, S. forthcoming (b)), located c.5.7km northeast of the site. Several pits containing Early Neolithic pottery were identified at Site 132, Faughart Lower 5 (Delaney, S. forthcoming (c)), located c. 6.5km northeast of the Site 101. A middle Neolithic to Late Neolithic/Early Bronze Age Beaker habitation site was identified at Site 108, Donaghmore 1 (Ó Donnachadha, B. forthcoming (e)) which was located on a low ridge only c.1.9Km north of Site 101 and may be directly associated with it.

Site 101 at Littlemill 1 consisted of two possible structures and a number of associated pits, postholes and stakeholes which dated to the Early and Middle Neolithic period. The analysis of the small assemblage of Neolithic pottery from the site indicates that the possible hut structure (Building 1) and at least one of the associated pits dated to the Early Neolithic. The pit was truncated by a later pit which contained Middle Neolithic pottery indicating the presence of at least two phases of Neolithic activity. It was not possible to date the features associated with the second temporary structure (Building 2) but it may have been associated with either the Early or Middle Neolithic activity.

Settlement in the Neolithic varied considerably. For example, a cluster of six houses were discovered at Corbally, Co. Kildare, while a number of single isolated structures were identified at Kishoge, Co. Dublin. Several structures at Thornhill, Co. Derry were enclosed by a palisade. Similarly the morphology and construction techniques were equally as diverse although large rectangular structures were the most common. These range in size with an internal area generally measuring from 20 to 50m². The largest examples are nearly twice that such as the rectangular structure at Knowth 1, County Meath, which had an internal area of 96m². The larger rectangular structures tend to have 2 or 3 internal divisions while the smaller examples have none (Armit *et al* 2003, 146).

However, during the Neolithic, Waddell (1998) points out that while it is believed that scattered self-sufficient farmsteads were typical for the majority of settlements (which may have included rectangular built houses), relatively temporary, replaceable dwellings may have been the norm for some sections of the society, and this may well be illustrated by the house site found at Littlemill 1, which appears to be a temporary structure. He draws on Thomas's (1996) proposal that social units may have had seasonal fluidity that would have also tied into the Megalithic landscape of the Neolithic. Transhumance (the practice of movement of livestock to summer hill pastures) and the exploitation of seasonal resources, such as fishing shellfish and salt collection, is thought to explain the numerous finds of flints and pottery in sand dunes along the north-east Irish coast and often found in association with hearth remains (Waddell 1998).

The majority of the buildings in the Neolithic were plank built such as Drummenny Lower, Co. Donegal. Typically the foundation trench of these structures was U-shaped with a vertical profile. The footprint of the plank wall can often be recognised at the top of the trench and this was surrounded by packing material that overlies a layer of re-deposited subsoil in the base of the trench. The packing material usually consisted of clay and contains a high quantity of boulders in order to support the planks and posts (Carlin, 2005). Post built examples are also known, such as Coolfore, Co. Louth, which would have been built using similar methods. A hole was dug to contain the post, which was inserted and the surrounding space backfilled with packing material of stones and soil. The remains at Littlemill 1 may well follow this example of construction. Subsequent alterations to these contexts would have been likely in the form of repair, deliberate destruction or the natural decomposition of the actual posts (Carlin 2005).

Examples which used a combination of constructional methods are also recorded such as Ballyglass, Mayo which used a combination of plank and post building methods (Armit *et al* 2003, 146). It appears that locations of houses were deliberately chosen for residences, those which were sheltered, south facing, with access to a water supply and a range of land types (Cooney and Grogan 1994). The structure at Littlemill 1 is located in close proximity to a water source.

2.1.2 The Bronze Age (c.2500BC – c.500BC)

From the relatively scant prehistoric archaeological evidence, there are indications that the area in which the DWB is located was not densely settled until the beginning of the Bronze Age (2400 BC). The vast majority of the archaeological evidence for this period is to be found at the 4-5m (25ft) contour, which reflects the coastline during the maximum post-glacial marine transgression, and it has been suggested that this settlement location would have facilitated the exploitation of the higher ground for farming and the lower ground for summer grazing (Gosling 1993, 242).

Bronze Age discoveries along the DWB consist of an Early Bronze Age Beaker (2400-2200BC) settlement at Site 112, Newtownbalregan 2 (Bayley, D. forthcoming (e)), located c.3.1km north of the site. A number of Bronze Age ring-barrows, a cist and a cairn were excavated at Site 127, Carn More 5 (Bayley, D. forthcoming (g)), located c.5.9km northeast of Site 101. A total of 3 Bronze Age burnt mounds/*fulachta fiadh* were excavated along the route of the DWB at Site 111, Newtownbalregan 1.1, Site 113, Newtownbalregan 5 and at Site 128, Faughart 1, 2 and 3. The burnt mound excavated at Site 102, Littlemill 2 dated to the medieval period (890-1250AD). A further 6 burnt mounds/*fulachta fiadh* were excavated by Archaeological Development Services Ltd (ADS Ltd.) as part of the archaeological resolution of the Dunleer/Dundalk Motorway.

2.1.3 The Iron Age (c.500BC – c.500AD)

There is a marked lack of known Iron Age (500BC-AD500) activity within the surrounding area. The ring barrow indentified at Site 131, Donaghmore 7 (O'Donnachadha forthcoming (g)) is the sole example of a definitive Iron Age site identified through the DWB archaeological investigations. The site consists of a small ring barrow and a single piece of unworked flint was found in the barrow with the remains of three charred wooden planks found within the barrow ditch. These were taken for specialist analysis and were submitted for Radiocarbon 14 dating. The dates returned confirmed that the ring barrow belongs to the Iron Age period, specifically the mid-Iron Age based on Cal 120BC-60AD.

2.2 Early Medieval Period (AD500-1169)

The early medieval period is depicted in the surviving sources as entirely rural characterised by the basic territorial unit known as *túath*. Byrne (1973) estimates that there were probably at least one hundred and fifty kings in Ireland at any given time during this period, each ruling over his own *túath*. During this sometimes violent period, roughly circular defensive enclosures known as ringforts were constructed to protect farmsteads. Although most of the ringforts that have been excavated are shown to date to this period, some have earlier origins and may have been originally constructed during the Iron Age, or even earlier.

The ringfort or rath is considered to be the most common indicator of settlement during the early medieval period (c. 500-1160 AD). The most recent study of the ringfort (Stout 2000) has suggested that there is a total of 45,119 potential ringforts or enclosure sites throughout Ireland. They are typically enclosed by an earthen bank and exterior ditch, and range from 25m to 50m in diameter. The smaller sized and single banked type (univallate) were more likely to be home to the lower ranks of society while larger examples with more than one bank (bivallate/trivallate) housed the more powerful kings and lords. At Site 124, Carn More 1, (Area 1) a ringfort identified in the RMP as LH004-067 was excavated in advance of the motorway's construction, with the RMP originally listing the monument as a circular enclosure.

Souterrains are artificial underground structures, usually built of dry stone walling and comprising of passages and chambers with creeps connecting them. Souterrains are generally regarded as having had a defensive or protective function, as evidenced by the complex construction of many of the sites, with narrow winding passages, deliberate obstructions and small chambers. Raiding was endemic to early medieval society, and souterrains are thought to have served to house portable valuables and non-combatants during a raid. There is a previously recorded souterrain located 30m to the E of the CPO line at Ch17.640 (LH007-071) also in Littlemill townland.

The historical sources for the early medieval period indicate that the main population group in north Louth was the *Conaille Muirtheimne*. They controlled the areas of *Cuailgne* (Cooley) and *Mag Muirtheimne*, (Plain of Muirtheimne) –corresponding to the area south of Dundalk, roughly equating with the modern baronies of Lower and Upper Dundalk. It has been suggested (Gosling 1993, 46) that the ancient boundaries of this kingdom may coincide with the dense concentration of souterrains in north Louth. Though nominally a branch of the *Ulaid*, who had their capital at *Eamain Mhaca* or Navan Fort in Co. Armagh. The *Conaille Muirtheimne* appear to have been subject to the kingdom of *Brega* which had its capital at *Cnógbha* or Knowth in Co. Meath at the time of its greatest political cohesion, during the first half of the 7th century A.D. Their earliest appearance in the annals is in 688 A.D. as allies of the Knowth branch of the *Síl nÁeda Sláine* at the battle of *Imblech Pich* (Emlagh,

Co. Meath), which was a key event in the political fragmentation of the *Síl nÁeda Sláine* dynasty. They were subsumed by the *Airgialla* in the early 12th century.

The burnt mound/*fulacht fiadh* identified at Site 102, Littlemill 2 was Radiocarbon 14 dated to Cal 890AD -1250AD (968 ± 85BP). Site 102, Littlemill 2 was roughly circular in shape and it is suggested that these sites which are identified as early medieval and medieval in date, tend to be circular or oval in shape with no evidence of any pit lining (O'Neill, pers.comm, 2007). The example at Littlemill 2, however was wood-lined.

2.3 Medieval Period (AD1169-1700)

The motte and bailey at Castletown (LH007-11807) located c.3.2 km north of Littlemill 1, represented the initial phase of Anglo-Norman activity in the area. Although there are some suggestions that John de Courcy was responsible for this development, it is generally accepted that it represents the initial headquarters of the de Verdon family in their new territory. The Anglo-Normans were responsible for the construction of a network of towns throughout Ireland with Louth being the most urbanised county.

The land in and around Castletown and Dundalk environs were granted to the Anglo-Norman Bertram de Verdon following his arrival in 1185, and corresponds to the modern barony of Upper Dundalk (Gosling, 1993, 252). The de Verdon estate passed onto the Bellevs with many of the tower houses were constructed at this time. The Bellevs contributed two large examples in 1472 and 1479, of which only the later survives, in the grounds of St. Louis convent (LH007-11801). The earlier tower house is known to have stood at Castletown cross (LH007-11803), but no traces of the tower house survive above ground. In 1429 Henry IV introduced a £10 subsidy was given to encourage the King's 'liege men' to build tower houses in The Pale, under the condition that they were built within ten years. This venture was so successful that twenty years later a limit was imposed on their construction. In Counties Louth, Kildare and Meath, the towers were mostly concentrated along the borders of the Pale (Davin 1982). The surviving tower house at Castletown (LH007-11801) most likely functioned as the centre of the Bellew manor of Dundalk during the 15th century. Garstin's map of 1655 shows it protected by a bawn wall, which also enclosed outhouses.

For information of the Anglo-Norman land ownership, we are reliant on documentary sources, and in Louth this information is recorded in the 'Dowdall deeds'. The lack of documentary sources and archaeological excavations in the area has led to large gaps in the record regarding the extent of Anglo-Norman settlement and how it was laid out. By the 13th century it seems that Castletown had its own church and burgesses. Garstin's map does point out the existence of burgage plots and streets in the vicinity of Mill road and Castletown cross. A watermill, most likely attached to the manor, is known from documentary sources although its precise location is not known.

At this time the new town of Dundalk, which lies c.2km to the east of Castletown, developed as the major urban centre. This was due to its market centre and port in addition to its more strategic siting on the major routeway linking Dublin with Ulster. It is probable that another factor influencing the move of the de Verdons was the nature of the topography of the general area. The unsatisfactory nature of the river at the Castletown location must have made it inaccessible to shipping even in the late 12th century. The new town also had the advantage of considerable natural defences. The site of the new town, which was to grow into the modern town of Dundalk, was thus better situated than Castletown from a commercial and defensive perspective

As Dundalk developed and became the focus for Anglo-Norman settlement in the area, Castletown fell into decline and Dundalk became the economic heart of the Lordship. The precise date for the foundation of the "*newtown*" of Dundalk is unclear. However by the late 13th century surviving property deeds make the distinction between the late 12th century settlement at Castletown and the Newtown or '*nove ville de Dundalc*'.

As a result of the low-lying nature of the surrounding landscape and the form of the gravel ridge on which the Newtown (Dundalk) was located, the town developed a markedly linear aspect, which is still apparent today.

2.4 Post-medieval (1700-1900)

Post-medieval archaeological remains identified in the study area relate to industrial structures particularly mills and kilns surrounding the Castletown and Kilcurry Rivers, with these structures usually being served by a mill race. Two mills and associated races occur near to the Castletown-Kilcurry confluence. A quarry for limestone is situated to the N of the corridor. Small scale extraction cuts are also known sunk into natural rock outcrops such as the one at Ch19,200.

Site 102 at Littlemill 2 (O'Donnachadha, B. forthcoming (f)) contained the remains of a post-medieval structure, which cartographic evidence demonstrates supports its existence at this location since the first edition OS map dating to 1836. It is probable that this structure was a small vernacular style residence accompanied by a small farmyard as was typical of the area and indeed most of Ireland during the 19th century.

At Site 119, Balregan 3 & 4 (Delaney, S. forthcoming (d)), the subsurface remains of a north-south oriented masonry structure was recorded. The foundations measured 21m in length and 6.5m in width and consisted of two rooms. The building appears to have been of 19th century construction based on the artefactual evidence and identifiable construction methods, however, the structure is not depicted on the 1835 or the 1908-9 1:10, 560 scale Ordnance Survey editions. Anecdotal evidence from a local landowner notes that a structure formerly located at this site was demolished around the mid 20th century; it is likely the building dates from the later 19th century and fell out of use at the same time as the Scotch Green Mill.

Site 118, Balregan 5 & 6 (Delaney, S. forthcoming (e)), contained the remains of a post-medieval water mill, which even in its ruinous condition showed a complete example of this form. Millrace, millpond, main sluices, internal wheel race and a number of main rooms along with the access road and access road and yard for the mill buildings were present.

3 THE EXCAVATION

3.1 Introduction

The excavation of site 101, Littlemill 1 was undertaken as part of the archaeological mitigation for the DWB in the townland of Littlemill.

3.2 Methodology

Topsoil stripping of the area commenced on 18th November 2002 and the fieldwork in the areas below was completed on 4th December 2002, using a team of one Supervisor and four Assistant Archaeologists.

The topsoil was removed by a machine equipped with a flat toothless bucket under strict archaeological supervision. After initial bulk stripping the area of excavation was hand cleaned in order to identify potential archaeological remains. All features were subsequently fully excavated and recorded by hand, using the single context recording system with plans and sections being produced at a scale of 1:50 and 1:20 (sections were recorded generally at 1:10) and photographs where necessary. All works were carried out in agreement with the Project Archaeologist and the National Monuments Section (formerly *Dúchas*-The Heritage Service) of the Department of Environment, Heritage and Local Government (DoEHLG). All contexts are described in Appendix 1.

3.3 Legends and Brackets

In the following text, the authors have used three types of brackets:

- { } = These enclose Subgroup numbers.
- () = These enclose Deposit numbers.
- [] = These enclose both Cut and Masonry Structure numbers.

CONTEXT KEY;

- prof = profile
- NSEW = Compass points, Eg; 'N-S' = North-South oriented feature
- All dimensions are given in metres
- d/l/w = depth/width/length
- s/m/lg = small/medium/large
- ang/sub-ang/rou/sub-rou = refer to stones, Eg; 's sub-ang' = small sub-angular stone
- mixed = ang + sub-ang + rou + sub-rou
- Dk/Lt = dark/light
- mod = moderate/moderately
- freq/occ = frequent/occasional
- ch = charcoal
- Hb/Ht = Human bone/teeth
- Ab/At = Animal bone/teeth
- frags/fls = fragments/flecks
- vert = vertical
- constr = construction
- sk = skeleton
- t'd/unx/s'd = truncated/unexcavated/segmented
- w/- = with
- pres = preservation

PERIOD KEY:

- PH: Prehistoric
- EM: Early Medieval
- MD: Medieval
- PM: Post-medieval
- MOD: Modern

4 EXCAVATION RESULTS

Stratigraphy

4.1 GROUP 1: The Natural Drift Geology

4.1.1 SUBGROUP {1000}: Natural Drift Geology

Contexts:

C	Area	Fill of	Filled by	Interpretation	Description
2	Site	n/a	n/a	Natural	A mixture of compact yellow-grey sandy clay with frequent small, medium and large stone inclusions.

Interpretation:

Littlemill 1 route chainage (Ch) 17.450 – 17.540, lies on a very gentle, east facing hill slope at c. 33m OD. The DWB in this area crosses a zone of prime agricultural land, with soils in the category of 'Wide Use Range' being very suitable for grassland and tillage enterprises. In general terms, the ground conditions comprise typically 3m to 5m of glacial till over Bedrock. The glacial nature of the sand and stone-strewn natural subsoil ensures the area is well drained. Bedrock consists of Silurian siltstones, mudstones and sandstones, and locally Dinatian limestone.

GROUP 1 DISCUSSION: The Natural Drift Geology

The sites identified at Littlemill sites are on an agriculturally productive area of land that undulates between c.20m OD and c.33m OD that surrounds Dundalk. Approximately 100m to the north of the main focus of Site 101, Littlemill 1 was a bowl shaped depression where there are numerous natural springs (Ch17.570 – 17.635). Such a topographical location would be ideal for agricultural habitation at any period.

4.2 GROUP 2: Neolithic activity

4.2.1 SUBGROUP {1001}: Building 1

Contexts:

C	Area	Fill of	Filled by	Interpretation	Description
54	10/20	n/a	C65	Posthole	Oval in plan, sides stepped in profile, base concave, 0.26d x 0.83l x 0.63w, E-W
61	10/20	n/a	C119, C120, C121	Posthole (stone-lined)	Oval in plan, SW side convex, NE side straight +very steep, base rounded, 0.37d x 0.47l x 0.37w, N-S
62	10/20	n/a	C75, C76	Posthole (stone-lined)	Sub-circular in plan, irreg sides and base, 0.44d x 0.52 dia
65	10/20	C54	n/a	fill	Grey brown silty clay, ch, bs, mod s-m sub-ang
75	10/20	C62	n/a	Charcoal deposit	Dk black grey, ch-rich silty clay, freq l sub-ang stones
76	10/20	C62	n/a	Nat silting	Lt brown, soft silty clay, l sub-ang
79	10/20	n/a	C111	Posthole (stone-lined)	Sub-circular in plan, sides very steep, base flat, 0.39d x 0.66l x 0.36w, NE-SW
97	10/20	n/a	C98	poss posthole	Circular in plan, U-shaped profile, 0.11d x 0.15l x 0.19w
98	10/20	C97	N/A	In situ burnt post	Dark brown/black, Loose charcoal rich clayey silt, sub angular stones line the cut
111	10/20	C79	n/a	Fill	Dk brown, friable silty clay, freq ch fl+frags + bb, mods-m stones
119	10/20	C61	n/a	poss nat silting	Dk grey brown, silty clay, ch fl, freq ang+sub-ang
120	10/20	C61	n/a	poss nat silting	lt grey brown, clayey silt, occ ch fl, occ stones
121	10/20	C61	n/a	burnt deposit	Black brown, ch rich silty clay, occ bb

Finds:

C	Find No.	Material	Period	Pottery form	Artefact type	Comments
65	02E1752:65:1	Flint				

Interpretation:

The 5 postholes [C79], [C62], [C61], [C97] and, [C54] were located in the middle of the site. A single rectangular structure of one construction phase was revealed. The building was constructed with a line of 5 postholes, some containing packing stones, oriented north-south over a distance of 7.5m. It is probable that these features formed the remains of a rectangular-shaped building built along a central row of supporting posts.

As only a central row of postholes was identified and no outer walls, it is a matter of speculation as to the width this structure would have been, however, given the structure's length of 7.5m, it is unlikely to have been more than 5m wide..

The stone-lined posthole [C62] which was one of the five postholes located in a row down the centre of the structure was filled with a layer of natural silt (C76) and a deposit of charcoal (C75). According to O'Carroll (Appendix 2.1), a total of 14 grams of oak were identified from the posthole which probably represents the remains of the post which once stood in the posthole prior to its burning. Charcoal retrieved from this fill returned a date of 5168 +/-52 BP. (WK – 18552) (Appendix 2.2). The 2 Sigma calibrated results from this sample produced a date of Cal 4070 BC – 3790 BC, dating the structure (Building 1) to the Early Neolithic period.

Several ancillary pits and stakeholes, were located in the area surrounding the house site, and the fill of the pit [C66] contained several sherds of Early Neolithic pottery which have been identified as fragments of an Early Neolithic Carinated Bowl (Appendix 2.4) indicating that Building 1 and the pit [C66] were broadly contemporary.

4.2.2 SUBGROUP {1002}: The Features near Building 1

Contexts:

C	Area	Fill of	Filled by	Interpretation	Description
43	10/20	n/a	C68	Shallow pit	Oval in plan, shallow, gently sloping sides, concave base, 0.12d x 0.85l x 0.33w, N-S
45	10/20	n/a	C105	Pit	sub-oval in plan, shallow, sides smooth + convex, base rounded, 0.13d x 0.50l x 0.43w, NW-SE
58	10/20	n/a	C74	Pit	irreg in plan, concave sides, irreg base, 0.11d x 1.23l x 1.08w, N-S
66	10/20	n/a	C69	Pit	Oval in plan, shallow, 0.08d x 0.72l x 0.29w, NE-SW
69	10/20	C66	n/a	Fill	Dk brown, sandy clay, mod ch, , mod s-m ang + sub – ang, pottery
70	10/20	n/a	C77	Posthole	Circular in plan, U-shaped profile, T'd by c.58, 0.175D x 1.80 dia
71	10/20	n/a	C77	Stakehole	Circular in plan, sides nearly vert, flat base, T'd by c.58, 0.60d x 0.12 dia
72	10/20	n/a	C73	Stakehole	Oval in plan, sides concave, base concave, 65d x 0.13l x 0.95w, E-W
73	10/20	C72	n/a	Nat silting	Grey brown, mod compact clayey silt, occ ch fl, occ s-l sub-ang + sub-rou
74	10/20	C58	n/a	Fill	Dk brown grey, mod compact silty clay, mod ch fl+frags, freq s flat ang+sub-ang
77	10/20	C72	N/a	Fill	Grey brown, mod compact clayey silt, occ ch fl, occ s-l sub-ang + sub-rou
80	10/20	n/a	C87	Poss stakehole	Oval in plan, sides fairly steep, base flat, 3 sub-ang, poss packing stones, 0.14d x 0.26l x 0.18w NE-SW
81	10/20	n/a	C88	Stakehole (stone-lined)	Oval in plan, irreg steep sides + base, 0.41l x 0.29w, ENE-WSW
87	10/20	C80	n/a	Fill	med orange brown, loose silty clay, rare stones
88	10/20	C81	n/a	Fill	med dk brown, friable sandy clay, very freq ch fl+frags, rare s pebbles,
99	10/20	n/a	C118	Poss stake/posthole	sub-circular in plan, sides irreg+mod sloped, base narrow + concave, 0.14d x 0.19dia
100	10/20	n/a	C145	Poss post/stakehole	Sub-rectangular in plan, E side t'd, sides vert+ irreg, base concave, 0.80d x 0.125 dia
101	10/20	n/a	C73	Poss stakehole	Circular in plan, U-shaped profile, 0.60d x 0.10 dia
102	10/20	n/a	C143	Poss stakehole	Circular in plan, tilted U-shaped in profile, inclination of axis to the N, 0.16d x 0.80dia
103	10/20	n/a	C104	Shallow pit	Sub-circular inb plan, sides +base irreg, 0.09d x 0.75l x 0.48w, N-S
104	10/20	C103	n/a	Poss in situ burning	Black brown, mod compact charcoal+silty clay, bs, occ s-m stones
105	10/20	C45	n/a	Nat silting	Mid grey brown, loose clayey silt, freq ch fl, mod s-m sub-ang
110	10/20	n/a	C144	Poss stakehole	Oval in plan, sides irreg+vert, t'd in S by c.102, base tapered blunt point
118	10/20	C99	n/a	Fill	red brown soft soil, mod ch, mod ang+rou
143	10/20	C102	n/a	Poss nat silting	Med grey brown, mod compact silt, rare ch fl, occ s sub-rou, PROB SAME AS 144
144	10/20	C110	n/a	Poss nat silting	Med grey brown, mod compact silt, rare ch fl, occ s sub-rou, PROB SAME AS 143
145	10/20	C100	n/a	Nat silting	Med grey brown silt, occ ch fl, occ s sub-rou

Finds:

C	Find No.	Material	Period	Pottery form	Artefact type	Comments
69	02E1752:69:1	Pottery	Early Neolithic	Carinated Bowl	Bodysherd	
69	02E1752:69:2	Pottery	Early Neolithic	Carinated Bowl	Bodysherd	
69	02E1752:69:3	Pottery	Early Neolithic	Carinated Bowl	Bodysherd	
69	02E1752:69:4	Pottery	Early Neolithic	Carinated Bowl	Necksherd	
69	02E1752:69:5	Pottery	Early Neolithic	Carinated Bowl	Necksherd	
69	02E1752:69:6	Pottery	Early Neolithic	Carinated Bowl	Bodysherd	
69	02E1752:69:7	Pottery	Early Neolithic	Carinated Bowl	Bodysherd	
69	02E1752:69:8	Pottery	Early Neolithic	Carinated Bowl	Bodysherd	

Interpretation:

Stakeholes [C70], [C71], [C72], [C101], [C99], [C100] [C102] and [C110] were located at the southeast end of the line of postholes in subgroup {1001}. The stakeholes [C70], [C71], [C72] and [C101] were situated within the shallow pit [C58] indicating that the pit was lined with wood perhaps to retain water for storage purposes.

The stakeholes [C80] and [C81] were situated at the northwest end of the line of postholes in {1001}, just to the west of the posthole [C79] in subgroup {1001}. The pits [C66] [C45] and [C43] were located to the west of subgroup {1001} and pit [C103] to the south. All of the above features are probably associated with the Building 1.

The oval-shaped pit [C66] measured 0.72m in length, 0.29m in width and was 0.08m deep. It was filled with dark brown sandy clay (C69) which contained a moderate quantity of charcoal and a moderate amount of small and medium sized stone inclusions. A total of 8 sherds of an Early Neolithic pottery were also recovered from the fill of this pit and Grogan and Roche (Appendix 2.4) identified them as fragments of an Early Neolithic Carinated Bowl. This feature was truncated by the rectangular pit [C106] which was filled with several sherds of a possible Middle Neolithic Broad Rimmed Bowl. The pit [C66] was located in close proximity to a number of other features possibly associated with Building 1 in subgroup {1002}. The stone-lined posthole [C62] which was one of the five postholes located in a row along the centre of the structure was filled with a layer of naturally deposited silt (C76) and a deposit of charcoal (C75). Charcoal retrieved from this fill returned a date of 5168 +/-52 BP. (WK – 18552) (Appendix 2.2). The 2 Sigma calibrated results from this sample produced a date of Cal 4070 BC – 3790 BC, dating the structure (Building 1) to the Early Neolithic. Therefore it is probable that the pit [C66] was broadly contemporary with this structure.

4.2.3 SUBGROUP {1003}: Middle Neolithic pit

Contexts:

C	Area	Fill of	Filled by	Interpretation	Description
106	10/20	n/a	C107	Cut of pit	Rectangular feature
107	10/20	C106	n/a	Fill	Dk brown, loose silty clay, freq ch, s-m ang+sub ang, pottery, occ bb

Finds:

C	Find No.	Material	Period	Pottery form	Artefact type	Comments
107	02E1752:107:1	Pottery	Middle Neolithic	Broad Rimmed Bowl	Bodysherd	
107	02E1752:107:2	Pottery	Middle Neolithic	Broad Rimmed Bowl	Necksherd	
107	02E1752:107:3	Pottery	Middle Neolithic	Broad Rimmed Bowl	Necksherd	
107	02E1752:107:4	Pottery	Middle Neolithic	Broad Rimmed Bowl	Bodysherd	
107	02E1752:107:5	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	
107	02E1752:107:6	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	
107	02E1752:107:7	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	
107	02E1752:107:8	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	
107	02E1752:107:9	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	
107	02E1752:107:10	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	
107	02E1752:107:11	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	

				Bowl		
107	02E1752:107:12	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	
107	02E1752:107:13	Pottery	Middle Neolithic	Broad Rimmed Bowl	Neck/body fragment	
107	02E1752:107:14	Pottery	Middle Neolithic	Broad Rimmed Bowl	Bodysherd	

Interpretation:

The pit [C106] in subgroup {1003} was rectangular in shape and filled with dark brown, loose, silty clay (C107) with frequent inclusions of charcoal and a moderate amount of small and medium sized stone inclusions. The fill (C107) also contained 14 sherds of Middle Neolithic pottery (as well as some burnt bone) which have been identified as fragments of a possible Middle Neolithic Broad Rimmed Bowl (Appendix 2.4, Appendix 2.5). According to Grogan and Roche (Appendix 2.4), this vessel had a club rim with a pronounced inward projection and, probably, a slight cavetto neck. The surfaces were well finished but the fabric was friable and there was no evidence for decoration which is considered unusual for this vessel type. This feature cut the pit [C66] which contained several sherds of an Early Neolithic Carinated Bowl. Pit [C106] was situated 2.20m to the east of subgroup {1001} and appears to represent a later phase of Neolithic activity on site. It is possible that a number of the other pits and postholes located close to Building 1 were also Middle Neolithic in date.

4.2.4 SUBGROUP {1004}: Three Pits

Contexts:

C	Area	Fill of	Filled with	Interpretation	Description
40	20/10	n/a	C41	Pit	Sub-triangular in plan, Wside very steep, more gentle in E, base pointed, 0.27d x 0.56l x 0.68w
41	20/10	C40	n/a	Fill	Dk grey brown, friable sandy clay, occ ch fl+s frags, rare s stones
44	20/10	n/a	C95, C96	Pit	Subcircular in plan, irreg sides and base, 4 smaller pits within feature, 0.36d x 3.10l x 3.00w
56	20/10	n/a	C60	Pit	Sub-oval in plan, shallow, sides gently sloped, concave base, 0.05d x 0.42l x 0.27w, E-W
60	20/10	C56	n/a	Fill	med brown, loose clay, freq pebbles
95	20/10	C44	n/a	Fill	Dk, ch-rich silt, very freq l ang+sub-ang, bb
96	20/10	C44	n/a	Fill	Mid brown, loose sandy clay, very freq l ang

Finds:

C	Find No.	Material	Period	Pottery form	Artefact type	Comments
95	02E1752:95:1	Pottery				
95	02E1752:95:1	Flint				
95	02E1752:95:1	Flint				
95	02E1752:95:1	Flint				

Interpretation;

The pits [C40], [C44] and [C56] were located to the southeast of the Building 1. [C44] was a large pit and contained burnt bone (Appendix 2.5), a single prehistoric pottery sherd and a large quantity of charcoal. The close proximity of the pit [C44] to Building 1 would indicate a probable domestic use for this pit, depending on whether the burnt bone was animal or human. The other pits [C40] and [C56] contained no finds or other datable material and were very shallow.

GROUP 2 DISCUSSION: Neolithic activity

Group	Sub group	Subgroup type	Period by finds/stratigraphy	Period by interpretation	Group Interpretation
2	1001	Postholes	Early Neolithic	Early Neolithic	Neolithic
2	1002	Pits + stakeholes	Neolithic	Neolithic	Neolithic
2	1003	Pit	Middle Neolithic	Middle Neolithic	Neolithic
2	1004	Pits	Neolithic	Neolithic	Neolithic

Discussion

Group 2 consists of the 5 postholes in subgroup {1001}, 5 pits, 1 posthole and 7 stakeholes in subgroup {1002}, a pit dated to the Middle Neolithic in subgroup {1003} and 3 pits in subgroup {1004}.

The 5 postholes in subgroup {1001} were located in the middle of the site. A single rectangular structure of one construction phase was revealed. The building was constructed with a line of 5 postholes, some containing packing stones, oriented north-south over a distance of 7.5m. It is probable that these features formed the remains of a rectangular-shaped building built along a central row of support posts.

The stone-lined posthole [C62], which was one of the five postholes located in a row down the centre of the structure, was filled with a layer of natural silt (C76) and a deposit of charcoal (C75). According to O'Carroll (Appendix 2.1), a total of 14 grams of oak was identified from the posthole which probably represents the remains of the post which once stood in the posthole prior to its burning. Charcoal retrieved from this fill returned a date of 5168 +/-52 BP. (WK – 18552) (Appendix 2.2). The 2 Sigma calibrated results from this sample produced a date of Cal 4070 BC – 3790 BC, dating the structure (Building 1) to the Early Neolithic period.

Several ancillary pits and stakeholes, were located in the area surrounding the house site, and the fill of the pit [C66] contained several sherds of Early Neolithic pottery which have been identified as fragments of an Early Neolithic Carinated Bowl (Appendix 2.4) indicating that this feature and the pit were broadly contemporary. Grogan and Roche (Appendix 2.4) state that the fabric of the single fine vessel was thin-walled and the exterior was burnished finished. They suggest that despite the lack of feature sherds present in the assemblage, this pottery represents the earliest type of Neolithic pottery.

The pit [C106] in subgroup {1003} was rectangular in shape and the fill (C107) contained 14 sherds of Middle Neolithic pottery which has been identified as fragments of a possible Middle Neolithic Broad Rimmed Bowl (Appendix 2.4). This feature cut the pit [C66] which contained several sherds of an Early Neolithic Carinated bowl. Pit [C106] was situated 2.20m to the east of subgroup {1001} and appears to represent a later phase of Neolithic activity on site. It is possible that a number of the other pits and postholes located close to Building 1 were also Middle Neolithic in date.

4.3 GROUP 3: Undated Activity 30m north of Building 1

4.3.1 SUBGROUP {1006}: Pits/postholes and stakeholes 30m north of Building 1

Contexts:

C	Area	Fill of	Filled with	Interpretation	Description
17	20/50	n/a	C25	Posthole	Circular in plan, shallow, gently sloping sides, concave base, 0.08d x 0.43l x 0.47w
18	20/50	n/a	C31	Poss posthole	Circular in plan, mod sloped sides, concave base, 0.27d x 0.75l x 0.66w, N-S
25	20/50	C17	n/a	Prob nat silting	Grey brown, silty clay, very rare m sub-ang occ fl ch
26	20/50	C27	N/A	Fill	Grey clayey silt
27	20/50	n/a	C26	Posthole	circular in plan, mod steep sides, flat base, 0.21d x 0.65 dia,
31	20/50	C18	n/a	Prob nat silting	Grey brown, loose silty clay, freq s-l stones
37	20/30	n/a	C38	Posthole	oval in plan, sides slope gently, flat rocky base, 0.16d x 0.7 x 0.6w, N-S
38	20/30	C37	n/a	Prob nat silting	Grey brown, loose silty clay, freq ch, freq stones
47	30/50	n/a	C48	Cut of pit	Shallow oval pit, 2.82mL x 1.40 w x 0.33m D, NE-SW
48	30/50	C47	n/a	Fill	Dk brown, loose silty clay, occ ch fl, freq s-l sub-ang+ang+sub-rou
90	30/40	n/a	C91	Cut of pit	irreg linear in plan, sides mod steep, concave base, stake/postholes within cut, 0.25d x 1.40l x 0.80w, N-S
91	30/40	C90	n/a	Fill	Dk brown, loose ch-rich silt, mod s-l ang+sub-ang
134	30/40	C135, C136, C137, C138, C139, C140, C141, C142	n/a	Nat silting	Lt brown, silt, freq ch, rare s ang
135	30/40	n/a	C134	Poss stakehole	sub-circular in plan, shallow, sides slightly slanted, axis of inclination from NNE, base pointed, 0.09d x 0.09l x 0.10w, within c.90
136	30/40	n/a	C134	Stakehole	Sub-circular in plan, steep sides, flat base, 0.10d x 0.17l x 0.08w, E-W, within c.90
137	30/40	n/a	C134	Stakehole	Sub-circular in plan, shallow, base pointed, 0.07d x 0.12l x 0.7w, E-W, within c.90
138	30/40	n/a	C134	Stakehole	Circular in plan, shallow, pointed base, 0.07d x 0.10l x 0.8w, within c.90
139	30/40	n/a	C134	Posthole	Sub-circular in plan, sides steep+regular, base flat, 0.20d x 0.25l x 0.13w, NNE-SSW, w/in c.90
140	30/40	n/a	C134	Stakehole	Circular in plan, steep sides, pointed base, 0.14d x 0.10dia, within c.90
141	30/40	n/a	C134	Stakehole	Circular in plan, deep, steep sides, flat base, 0.23d x 0.20l x 0.17w, within c.90

Finds:

None

Interpretation:

Approximately 20-30m to the north of Building 1, a group of 2 shallow pits [C47], and [C90], 5 postholes [C17], [C18], [C27], [C37] and [C139] and 6 stakeholes [C135], [C136], [C137], [C138], [C140] and [C141] were discovered. The stakeholes and the posthole [C139] had silted up naturally (C134). Similar to pit [C58] in subgroup {1002}, the 6 stakeholes were cut into the base of the pit [C90], presumably indicating that the pit was lined with wood perhaps to retain water for storage purposes.

The two pits [C47] and [C90] were on average 0.20m deep and 0.30m wide with gently rounded bases. The pit [C47] was filled with loose, dark brown silty clay (C48) with occasional flecks of charcoal and frequent small and medium stone inclusions while the pit [C90] was filled with loose, dark brown silt (C91) with a large quantity of

charcoal and a moderate amount of small and medium stone inclusions. The function of these pits remains unclear as no finds or other datable material was recovered from the fills.

The arrangement of the pits and postholes in subgroup {1006} do not appear to represent a second structure and it is probable that this group of features were associated with domestic activity. Due to the lack of finds and datable material, it was not possible to establish whether these features were associated with either the Early or Middle Neolithic activity located to the southwest.

4.3.2 SUBGROUP {1007}: Postholes

Contexts:

C	Area	Fill of	Filled with	Interpretation	Description
63	30/60	n/a	C67	Posthole	Sub-circular in plan, shallow, fairly gentle sides, rounded base, 0.11d x 0.20l x 0.15w, NW-SE
64	30/60	n/a	C82	Posthole	Sub-square in plan, NW side mod steep, SE side more gradual, base concave, 0.09d x 0.16l x 0.11w, SE-NW
67	30/60	C63	n/a	Prob nat silting	Grey brown, loose sandy silt, occ s-m pebbles
82	30/60	C64	n/a	Fill	Lt brown, loose sandy silt, mod s-m pebbles

Finds:

None

Interpretation:

The subgroup {1007} comprised two postholes [C63] and [C64]. The posthole [C63] had filled up naturally with silt (C67) while [C64] was deliberately filled with loose light brown sandy silt (C82) with a moderate amount of small to medium pebbles. The postholes were located directly to the north of {1006} and were probably directly associated with this activity. No finds or other datable material was recovered from these features.

GROUP 3 DISCUSSION: Undated Activity 30m north of Building 1

Group	Sub group	Subgroup type	Period by finds/stratigraphy	Period by interpretation	Group Interpretation
3	1006	Pits, postholes and stakeholes		Prehistoric	Prehistoric
3	1007	Postholes		Prehistoric	Prehistoric

Summary:

Group 3 consists of a group of 3 pits, 5 postholes and 6 stakeholes in subgroup {1006} and two postholes in subgroup {1005}. These features do not appear to represent the remains of a second prehistoric structure but seem to be a zone of probable domestic activity possibly associated with the Neolithic activity in Group 2. Alternatively it is also possible that this activity was associated with the possible structure located to the southeast. However, no finds or other datable material was retrieved from either subgroup to establish a definite function or date for this group.

4.4 GROUP 4: Features to the east/northeast of Building 1

4.4.1 SUBGROUP {1008}: 5 postholes, 4 pits and 3 stakeholes

Contexts:

C	Area	Fill of	Filled with	Interpretation	Description
124	40/10	n/a	C125	Poss posthole	Circular in plan, sides smooth + convex, base rounded, 0.09d x 0.15dia
125	40/10	C124	N/a	Fill	Lt brown, loose silty clay, mod s sub-ang
131	40/20	n/a	C132	Shallow pit	Oval in plan, one side steep, base sloped, 0.16d x 0.71l x 0.46w, E-W
132	40/20	C131	N/a	Fill	Med brown, mod compact coarse sand, mod sub-ang
133	40/20	n/a	C184,C185, C182,C183	Pit with posthole + stakehole	Oval in plan, sides irreg+stepped, base irreg, stakehole and posthole in base, 0.12d x 0.59l x 0.38w, E-W
152	40/20	n/a	C153	Pit	Oval in plan, concave sides, flat base 0.12d x 0.59l x 0.38w, E-W
153	40/20	C152	N/a	Fill	Dk grey brown, mod compact silty clay w/ yellow clay mottling, freq ch frags, freq ang+sub-ang
156	40/10	n/a	C187	Posthole	Circular in plan, very deep, vert sides, base uneven, 0.57d x 0.57dia
174	40/10	n/a	C175	Stakehole	Sub-circular in plan, shallow, pointed base, poss overcut by digger, 0.08dx0.14lx0.15w
175	40/10	C174	N/a	Fill	Med brown, mod compact coarse sand, mod sub-ang
176	40/10	n/a	C177	Prob stakehole	Oval in plan, Perpendicular to c.162, 0.12d x 0.17l x 0.10w
177	40/10	C176	N/a	Fill	Dk, loosely friable soil w/ some gravel deposits, occ ch
182	40/20	n/a	C184	Stakehole	Circular in plan, U-shaped in profile, 0.14d x 0.09 dia, within 133
183	40/20	n/a	C185	Posthole	Sub-circular in plan, concave sides +base, 0.09d x 0.26l x 0.23w, within 133
184	40/20	C182	N/a	Fill	Mid brown tightly compacted silty clay,
185	40/20	C183	N/a	Fill	Red brown, mod compact sandy silt, freq sub-ang
187	40/10	C156	N/a	Poss in situ burning	Dk grey brown, loose ch-rich silty clay

Finds:

None

Interpretation:

The group of features in subgroup {1008} consisted of a scatter of pits, postholes and stakeholes which were located approximately 20m-24m to the east/northeast of Building 1. The postholes [C124], [C170] and [C156] were situated in close proximity to the stakeholes [C174] and [C176]. The posthole [C156] was filled with a charcoal-rich fill (C187) and was deep and cylindrical. The pit [C133] was cut by a posthole [C183] and a stakehole [C182] at its base. It was located near 2 other pits [C131] and [C152]. No finds were found in these features.

These postholes and stakeholes may represent the remains of a Building or temporary Structure but the detail form of this is not clear.

GROUP 4 DISCUSSION: Features east/northeast of Building 1: Probable Building 2

Group	Sub group	Subgroup type	Period by finds/stratigraphy	Period by interpretation	Group Interpretation
4	1006	5 postholes, 3 pits and 3 stakeholes			

Summary:

Group 4 consists of a scatter of pits, postholes and stakeholes that may represent the remains of a temporary structure (Building 2). The features were located approximately 20m east/northeast of Building 1 in subgroup {1001}.

The shallow pits and post-holes in group 4 on the eastern side of the site cannot be directly related to the possible structure (Building 1) in group 2 on the western side or the group of features in group 3 located to the northwest. The features did not produce any finds or other diagnostic material; but it is possible that they were the product of the same domestic activity.

4.5 GROUP 5: Topsoil

4.5.1 SUBGROUP {1007} Topsoil

Contexts:

C	Area	Fill of	Filled by	Interpretation	Description
0001	Site	n/a	n/a	Topsoil	

Finds:

C	Find No.	Material	Period	Pottery form	Artefact type	Comments
1	02E01752: 1:1	Flint			Flint scraper	
1	02E01752: 1:2	Flint			Flint	
1	02E01752: 1:3	Flint			Flint	
1	02E01752: 1:4	Flint			Flint	
1	02E01752: 1:5	Flint			Flint	
1	02E01752: 1:6	Flint			Flint	
1	02E01752: 1:7	Stone			Possible hammerstone	
1	02E01752: 1:8	Flint			Flint scraper	
1	02E01752: 1:9	Flint			Flint	
1	02E01752: 1:10	Flint			Flint	
1	02E01752: 1:11	Flint			Flint	
1	02E01752: 1:12	Flint			Flint	

Interpretation:

Modern agricultural topsoil covered the site. Plough action associated with the Group 5 topsoil had seriously truncated all the archaeological remains.

GROUP 5 DISCUSSION: Topsoil

Group	Subgroup	Subgroup type	Period by finds/ stratigraphy	Period by interpretation	Group Interpretation
5	1007	Topsoil			

Summary:

Although a number of flint artefacts were discovered within the topsoil, this was due to archaeological finds being subject to truncation through modern ploughing practices.

4.6 Synthesis

Open Area 1: Group 1, Geology and topography

The DWB in this area crosses a zone of prime agricultural land, with soils in the category of 'Wide Use Range' being very suitable for grassland and tillage enterprises. In general terms, the ground conditions comprise typically 3m to 5m of glacial till over Bedrock. The glacial nature of the sand and stone-strewn natural subsoil ensures the area is well drained. Bedrock consists of Silurian siltstones, mudstones, sandstones, and locally Dinatian limestone. The Littlemill sites were on an agriculturally productive area of land that undulates between c.20m OD and c.33m OD that surrounds Dundalk. Approximately 100m to the north of the main focus of Site 101, Littlemill 1, was a bowl shaped depression where there are numerous natural springs (Ch17.570 – 17.635). Such a topographical location would be ideal for agricultural habitation at any period.

Open Area 2: Building 1 and possible building 2

Archaeological activity on the site, although not proved to be strictly contemporary can all be said to probably be broadly contemporary, dating to the Early and Middle Neolithic period.

Building 1 and associated features

The 5 postholes in subgroup {1001} were located in the middle of the site. A single rectangular structure of one construction phase was revealed. The building was constructed with a line of 5 postholes, some containing packing stones, oriented north-south over a distance of 7.5m. It is probable that these features formed the remains of a rectangular-shaped building built along a central row of support posts.

The stone-lined posthole [C62], which was one of the five postholes located in a row down the centre of the structure, was filled with a layer of natural silt (C76) and a deposit of charcoal (C75). According to O'Carroll (Appendix 2.1), a total of 14 grams of oak was identified from the posthole which probably represents the remains of the post which once stood in the posthole prior to its burning. Charcoal retrieved from this fill returned a date of 5168 +/-52 BP. (WK – 18552) (Appendix). The 2 Sigma calibrated results from this sample produced a date of Cal 4070 BC – 3790 BC, dating the structure (Building 1) to the Early Neolithic period.

Several ancillary pits and stakeholes, were located in the area surrounding the house site, and the fill of the pit [C66] contained several sherds of Early Neolithic pottery which have been identified as fragments of an Early Neolithic Carinated Bowl (Appendix 2.4) indicating that this feature and the pit were broadly contemporary. Grogan and Roche (Appendix 2.4) state that the fabric of the single fine vessel was thin-walled and the exterior was burnished finished. They suggest that despite the lack of feature sherds present in the assemblage, this pottery represents the earliest type of Neolithic pottery.

The pit [C106] in subgroup {1004} was rectangular in shape and the fill (C107) contained 14 sherds of Middle Neolithic pottery which has been identified as fragments of a possible Middle Neolithic Broad Rimmed Bowl (Appendix 2.4). This feature cut the pit [C66] which contained several sherds of an Early Neolithic Carinated bowl. Pit [C106] was situated 2.20m to the east of subgroup {1001} and appears to represent a later phase of Neolithic activity on site. It is possible that a number of the other pits and postholes located close to Building 1 were also Middle Neolithic in date.

Open Area 2: Possible cooking area.

30m to the northeast of Building 1 was a group of 2 pits, 5 postholes and 6 stakeholes {1004} and two postholes and a pit [1005} (Group 3). These features do not appear to represent the remains of another prehistoric building, although some temporary structure such as a windbreak was implied by a few postholes, but seem to be a zone of shallow pitting, possibly for cooking purposes. It was possible that this area of activity related to a second habitation area and was not strictly contemporary with Building 1. However, no finds were retrieved from either subgroup to establish a definite function or date for this group.

Open Area 2: Possible Building 2.

Group 4 consisted of the features that were located approximately 20m east of the possible house structure {1001}. Group 4 appeared to represent the remains of a second building or temporary Structure (Building 2) but the detail form of this construction and place in the site sequence was not clear. None of the features contained finds

Open Area 3:

No discernible land use

Open Area 4: Post-medieval and modern land use

Modern agricultural topsoil covered the site. Plough action associated with the Group 5 topsoil had seriously truncated all the archaeological remains.

5 DISCUSSION

5.1 Realisation of the original research aims

This section examines the extent to which preliminary assessment of the results of the excavation reveal how the original research aims have been or can be answered.

Original Research Questions (**ORQ**) were prepared after the results of the test-trenching exercise were known and before the rescue excavations began. The following are the Original Research Questions relating to the excavation at Site 101 Littlemill 1 and Responses (**R**) based on preliminary assessment of the site data.

Site 101, Littlemill 1

ORQ 1: *How many buildings are present, what were the functions and construction methods? Are there different phases of construction and use?*

R: A single 'house structure' of one construction phase was revealed at Ch17.480. The 'house' was constructed consisted of a line of 5 postholes, some of which were stone-lined, oriented north-south over a distance of 7.5m. At the northern terminus, a narrow stone-lined ditch/gully ran east-west at a right angle to the posthole alignment forming a "T". It is possible that these features form the remains of a rectangular shaped house built along a central row of support posts. As only a centre row of postholes was identified, and no outer walls, it is a matter of speculation as to how wide this structure would have been, but given the houses length of 7.5m, it is unlikely to have been more than 5m in width. Several ancillary pits and stakeholes were located in the area surrounding the possible house site, some of which contained flakes of worked flint and sherds of Early and Middle Neolithic pottery indicating at least two phases of Neolithic activity at this site. In total around 15 features were identified in an area of c. 20m x 20m.

In the northeast corner of the excavation, at Ch17.500, a semi-circular arrangement of 6 shallow pits were discovered covering an area of c. 15m x 10m. The pits were on average 0.20m deep and 0.30m wide with gently rounded bases and shallow sides. The insubstantial nature of these pits would tend to imply that they could not support a structure of any great size. Also the shallow (surviving) depth of the features could mean that other pits may have been completely truncated.

ORQ 2: *What are the dates of occupation and how does the site change through time?*

R: The pottery analysis (Appendix 2.4) and results on the radiocarbon dating (Appendix) indicate at least two phases of Neolithic activity at Site101, Littlemill 1. Several fragments of an Early Neolithic Carinated bowl were recovered from a pit [C66] which was truncated by the pit [C106] containing several sherds of a Middle Neolithic Broad Rimmed Bowl. Charcoal retrieved from the fill of a stone-lined posthole from the possible structure returned a date of 5168 +/-52 BP. (WK – 18552) (Appendix 2.2). The 2 Sigma calibrated results from this sample produced a date of Cal 4070 BC – 3790 BC, dating the structure (Building 1) to the Early Neolithic period.

ORQ 3: *Are there areas where different activities were undertaken?*

R: The site was un-enclosed and undefended. There was no sign of industrial activity. The area of Site 102 Littlemill 2 (Ó Donnachadha, B. forthcoming (f)) presumably provided a close and constant water source during the period of occupation.

Specifically, two different areas appear to be represented. The house to the south and the arc of pits/postholes, 20m to the northeast. Other dispersed features probably related to areas of the settlement that have been otherwise completely truncated.

ORQ 4: *What is the nature of the finds and the environmental evidence? What type of evidence is present here and do they give indications for specific activities?*

R: The finds consisted of several sherds of an Early Neolithic Carinated bowl and a Middle Neolithic Broad Rimmed bowl. A number of scrapers and blades were also recovered but the results of the lithic analysis indicated that “none of the artefacts could be seen as strong chronological indicators” (Appendix 2.3).

ORQ 5: *Is there any evidence for burial or ritual activity?*

R: There was no evidence of any burials, either inhumation or cremation.

5.2 Conclusions

Discussion of Site 101, Littlemill 1 (by Dr. Jessica Smyth MA PhD)

Littlemill 1 (Site 101) is located in Littlemill townland, c. 2km southwest of Dundalk, Co. Louth (NGR 302783/305249). The site was initially identified in March 2002 during test trenching along the proposed route of the Dundalk Western Bypass and was resolved over a three week period in November/December 2002. A total of three sites were excavated in Littlemill townland, all occurring within 450m of one another. Littlemill 2, 50m to the northwest, yielded a date of AD890-1250. A further 400m to the northwest, Littlemill 4/5 produced sherds of Middle Neolithic pottery. All of the sites were located on very gentle slopes within an undulating terrain between 20m and 33m OD. Approximately 100m from Littlemill 1 was a bowl shaped depression containing numerous natural springs (Ryan and Bailey 2006).

Summary of features

The total area excavated at Littlemill 1 measured c. 70m x 60m (4200m²). Over this area a number of structural and other cut features were uncovered. In the middle of the site a line of five postholes was excavated. These postholes, some of which contained packing stones, extended northwest-southeast over a distance of 7.5m and were interpreted as the central longitudinal axis of a rectangular house 7.5m long and approximately 5m wide (Ryan and Bailey 2006). Oak charcoal from the fill of one of these postholes was dated to 5168±52BP (4070-3790 cal BC [92.4% probability]; Wk-18552).

Several features were excavated immediately beside the line of postholes. These included a shallow pit with possible *in situ* burning c. 2m to the southeast and two pits c. 2.5m to the west of the posthole line, one truncated slightly by the other. The later pit contained sherds of Middle Neolithic pottery (as well as some burnt bone) while the earlier pit contained sherds of Early Neolithic pottery (Appendix 2.4). Approximately 10m to the southeast of the posthole line was a group of three pits, one of which was large and contained a dark, charcoal-rich fill with burnt bone.

30m north of the posthole line lay another group of postholes, shallow pits and stakeholes. These features were interpreted as a zone of shallow pitting, possibly for cooking purposes, although no finds were retrieved to establish a definite function or date (Ryan and Bailey 2006). A group of postholes, stakeholes and pits approximately 20m to the east of the building were tentatively interpreted as the possible remains of a temporary structure.

The Early Neolithic at Littlemill 1

The early 4th millennium BC date from oak charcoal in Posthole 62 of 'Building 1' and the fragments of Early Neolithic Carinated pottery from Pit [C66], c. 2m west of Posthole [C62], would seem to suggest that this rectilinear post-built structure dates to the Early Neolithic period, though when exactly within this rough 500-year period we cannot tell. The oak sample used for dating came from "the inner part of a tree of unknown age and it was not possible to tell from identification how much larger, if at all, the whole piece was" (O Carroll 2006). Thus, the date of c. 4070-3790 cal BC may relate to the inner part of the tree and the actual date of felling and use may be several centuries later.

The structure at Littlemill 1 is not typical of most of the documented Early Neolithic rectangular houses in that it appears to be exclusively post-built - although only part of the building was recovered and it is possible that associated slot trenches have been truncated. Some of the postholes were up to 0.44m deep however, and if truncation had occurred, removing the traces of a slot trench, these posts must originally have been inserted to a very great depth.

The supposed central longitudinal line of posts is also unusual. In nearly all of the documented examples, posts run across the shorter, latitudinal/cross axis of the building (Figure 1). The single charcoal sample submitted for analysis was identified as oak and in the specialist's view probably represented "the remains of the post which once stood in the posthole prior to its burning" (Appendix 2.1). The use of oak in the construction of Irish Early Neolithic houses is well documented (Grogan 1996, 2002; Cross 2003; Smyth 2007), although common in buildings of other periods too.

Several Early Neolithic houses have recently been uncovered in north Louth. A single house was excavated at Haggardstown, south of Dundalk (Gill McLoughlin, pers. comm.) and north of Littlemill, four buildings were uncovered at Plaster and Agnaskeagh (John Turrell, pers. comm.). Other Early Neolithic sites on the Dundalk Western Bypass include Faughart Lower 5, Donaghmore 1a and Newtownbalregan 6 (Delaney 2006; Ó Donnchadha 2002; Bayley 2004). All of this evidence suggests that the area around Dundalk Bay was well populated in early prehistory.

Virtually all of the documented Irish Early Neolithic houses are surrounded by a variety of features such as pits, external hearths, metal surfaces and posthole/stakehole settings. Domestic activity can take place in a variety of settings, from the house to outdoor areas and out into the landscape beyond (Rapoport 1990), and it is likely that in the Neolithic outdoor spaces were the logical choice for tasks requiring good light, such as flint-knapping and pottery production, and would have provided a welcome change to smoky, dark interiors (Cooney 2000: 62-3). It is very probable that at least some of the pits and postholes found around the Littlemill building were contemporary with its use although without dating the charcoal from these features it is not possible to be sure of the nature and extent of the activity. This is compounded by the results of lithic analysis, which stated that "none of the artefacts could be seen as strong chronological indicators" (Appendix 2.3).

The Middle Neolithic at Littlemill 1

Several heavily fragmented sherds of Middle Neolithic Impressed Ware were found in the pit [C106]. This appears to represent later activity than that associated with 'Building 1' as pit [C106] truncated pit [C66] which contained Early Neolithic pottery. Other postholes, stakeholes and pits from the site may also date to this period of activity but in the absence of additional radiocarbon dates this cannot be conclusively proven. The pottery fragments, whether they represented refuse or part of more formal deposits, indicate the use of the site by groups of people in the Middle

Neolithic. On the evidence to hand, this activity would seem to be relatively short-lived in nature and may have had to do with the seasonal or periodic exploitation of local resources. Given the location of the site on fertile, low-lying land close to a water source, it is not unlikely that Middle Neolithic groups were returning to exploit the same terrain and resources tapped in the Early Neolithic. According to Grogan and Roche (Appendix 2.4), the pottery at Littlemill is part of a concentration in the east Ulster/north Leinster region and comparative material has been found at a number of Louth sites including Townleyhall 2, Balregan 1, Newtownbalregan 6, Littlemill 4/5, Donaghmore 1 and 4 (Eogan 1963??; Ó Donnchadha 2003a; Bayley 2004; Ó Donnchadha 2003b; Grogan and Roche 2005; 2006b; 2006c; 2006d).

6 BIBLIOGRAPHY

Armit, I et al (eds) 2003 *Neolithic Settlement in Ireland and Western Britain*. Oxford University Press

Carlin, N 2005 *An Exploration of Approaches to the finds from foundations of Early Neolithic Rectilinear Structures*. (Unpublished academic essays from Queens University)

Cooney, G and Grogan, E 1994 *Irish Prehistory. A Social Perspective*. Dublin

Cooney, G. 2000. *Landscapes of Neolithic Ireland*. London: Routledge.

Cross, S. 2003. Irish Neolithic settlement architecture – a reappraisal. In I. Armit, E.

Buckley, V.M and Sweetman, P.D 1991, *Archaeological Survey of County Louth*

Byrne, F. J 1973 *Irish Kings and High Kings* London

Gosling, P. 1993. *From Dún Delca to Dundalk: the Topography and Archaeology of a Medieval Frontier Town*, Dundalk: Co Louth Archaeological and Historical Society.

Gowen, M. 1988. *Three Irish Gas Pipelines: New archaeological evidence in Munster*. Bray: Wordwell.

Grogan, E. 1996. Neolithic Houses in Ireland. In T. Darvill and J. Thomas (eds), *Neolithic Houses of Northwest Europe and Beyond*, Oxbow Monograph 57: 41-60. Oxford: Oxbow.

Grogan, E. 2002. Neolithic houses in Ireland: a broader perspective. *Antiquity* 76: 517-25.

Mitchell, G.F and Ryan, M 1997 *Reading the Irish Landscape*. Dublin

Murphy, E. Nelis and D. Simpson (eds), *Neolithic Settlement in Ireland and Western Britain*: 195-202. Oxford: Oxbow.

Pollard, J. 1999. 'These places have their moments': thoughts on settlement practice in the British Neolithic. In J. Bruck & M. Goodman (eds), *Making Places in the Prehistoric World*: 76-93. London: UCL Press.

Pollard, J. 2001. The aesthetics of depositional practice. *World Archaeology* 33(2): 315-33.

Rapoport, A. 1990. Systems of activities and systems of settings. In S. Kent (ed.), *Domestic Architecture and the Use of Space*: 9-20. Cambridge: Cambridge University Press.

Smyth, J. 2007. The role of the house in early Neolithic Ireland. *European Journal of Archaeology* Vol. 9(2): 225–252.

Smyth, J. in prep. Our hidden Neolithic? Following the paper trail. Proceedings of *Living Landscapes* conference, Belfast 2007, British Archaeological Reports.

Stout, M 2000 *The Irish Ringfort* Four Courts Press: Dublin

Cartographic Sources

First Edition Ordnance Survey Map, 1835, Sheet 7, County Louth, scale 1:10,560.

Office of Public Works, 1996, *Recorded Monuments Protected under Section 12 of the National Monuments (Amendment) Act, 1994: County Louth*

Ordnance Survey First Edition (surveyed) 1835, County Louth, Sheet 007

Ordnance Survey Revised 1938-9, County Louth, Sheet 007

Petty, W., 1656, *The Down Survey of the Barony of Lower Dundalk*

Petty, W., 1656, *The Down Survey of the Barony of Upper Dundalk*

Second Edition Ordnance Survey Map 1863, Sheet 7, County Louth, scale 1:10,560.

Taylor, A., & Skinner, J., 1783, *Map of County Louth*.

Third Edition Ordnance Survey Map 1938, Sheet 7, County Louth, scale 1:2,500

Other Archaeological Work on the Dundalk Western Bypass

Bayley, D., forthcoming (a), Site 120, Fort Hill (Licence Ref.: 02E1326), *Final Report*. Dublin: IAC Ltd.

Bayley, D., forthcoming (b), Site 111, Newtownbalregan 1.1 (Licence Ref.: 02E1835), *Final Report*. Dublin: IAC Ltd.

Bayley, D., forthcoming (c), Site 113, Newtownbalregan 5 (Licence Ref.: 03E0114), *Final Report*. Dublin: IAC Ltd.

Bayley, D., forthcoming (d), Site 114, Newtownbalregan 6 (Licence Ref.: 03E0115), *Final Report*. Dublin: IAC Ltd.

Bayley, D., forthcoming (e), Site, Newtownbalregan 2 (Licence Ref.: 03E0113), *Final Report*. Dublin: IAC Ltd.

Bayley, D., forthcoming (f), Site, Newtownbalregan, 1.2 (Licence Ref.: 02E1836), *Final Report*. Dublin: IAC Ltd.

Bayley, D., forthcoming (g), Site, Carn More 5 (Licence Ref.: 03E0873), *Final Report*. Dublin: IAC Ltd.

Delaney, S., forthcoming (a), Site 132, Faughart 1, 2, 3 (Licence Ref.: 03E1394), *Final Report*. Dublin: IAC Ltd.

Delaney, S., forthcoming (b), Site 124, Carn More 1 (Licence Ref.: 03E1867), *Final Report*. Dublin: IAC Ltd.

Delaney, S., forthcoming (c), Site 132, Faughart Lower 5 (Licence Ref.: 03E01575), *Final Report*. Dublin: IAC Ltd.

Delaney, S., forthcoming (d), Site 119, Balregan 3 & 4 (Licence Ref.: 03E0158), *Final Report*. Dublin: IAC Ltd.

Delaney, S., forthcoming (e), Site 118, Balregan 5 & 6 (Licence Ref.: 03E0159), *Final Report*. Dublin: IAC Ltd.

Ó Donnachadha, forthcoming (a), 2002, Site 109, Donaghmore 6, (Licence Ref.: 02E1335), *Final Report*. Dublin: IAC Ltd.

Ó Donnachadha, B., forthcoming (b), Site 110, Donaghmore 5, (Licence Ref.: 02E1333), *Final Report*. Dublin: IAC Ltd.

Ó Donnachadha, B., forthcoming (c), Site 103, Littlemill 4/5, (Licence Ref.: 02E1833), *Final Report*. Dublin: IAC Ltd.

Ó Donnachadha, B., forthcoming (d), Site 101, Littlemill 1, (Licence Ref.: 02E1752), *Final Report*. Dublin: IAC Ltd.

Ó Donnachadha, B., forthcoming (e), Site 108, Donaghmore 1, (Licence Ref.: 02E1330), *Final Report*. Dublin: IAC Ltd.

Ó Donnachadha, B., forthcoming (f), Site 102, Littlemill 2, (Licence Ref.: 02E01753), *Final Report*. Dublin: IAC Ltd.

Ó Donnachadha, B., forthcoming (g), Site, Donaghmore 7, (Licence Ref.: 02E1583), *Final Report*. Dublin: IAC Ltd.

Grogan, E. and Roche, H. 2005. The prehistoric pottery from Balregan 1, Co. Louth (03E0157). Unpublished Report for Irish Archaeological Consultancy Ltd.

Grogan, E. and Roche, H. 2006b. The prehistoric pottery from Littlemill 4/5, Co. Louth (02E1833). Unpublished Report for Irish Archaeological Consultancy Ltd.

Grogan, E. and Roche, H. 2006c. The prehistoric pottery from Donaghmore 1, Co. Louth (02E1330). Unpublished Report for Irish Archaeological Consultancy Ltd.

Grogan, E. and Roche, H. 2006d. The prehistoric pottery from Donaghmore 4, Co. Louth (02E1331). Unpublished Report for Irish Archaeological Consultancy Ltd.

GSB Prospection. 2002. 'Geophysical Survey Report 2002/10, Dundalk Western Bypass'.

Louth County Council. 2001. 'Dundalk Western Bypass PPP Scheme: Tender for Archaeological Services'.

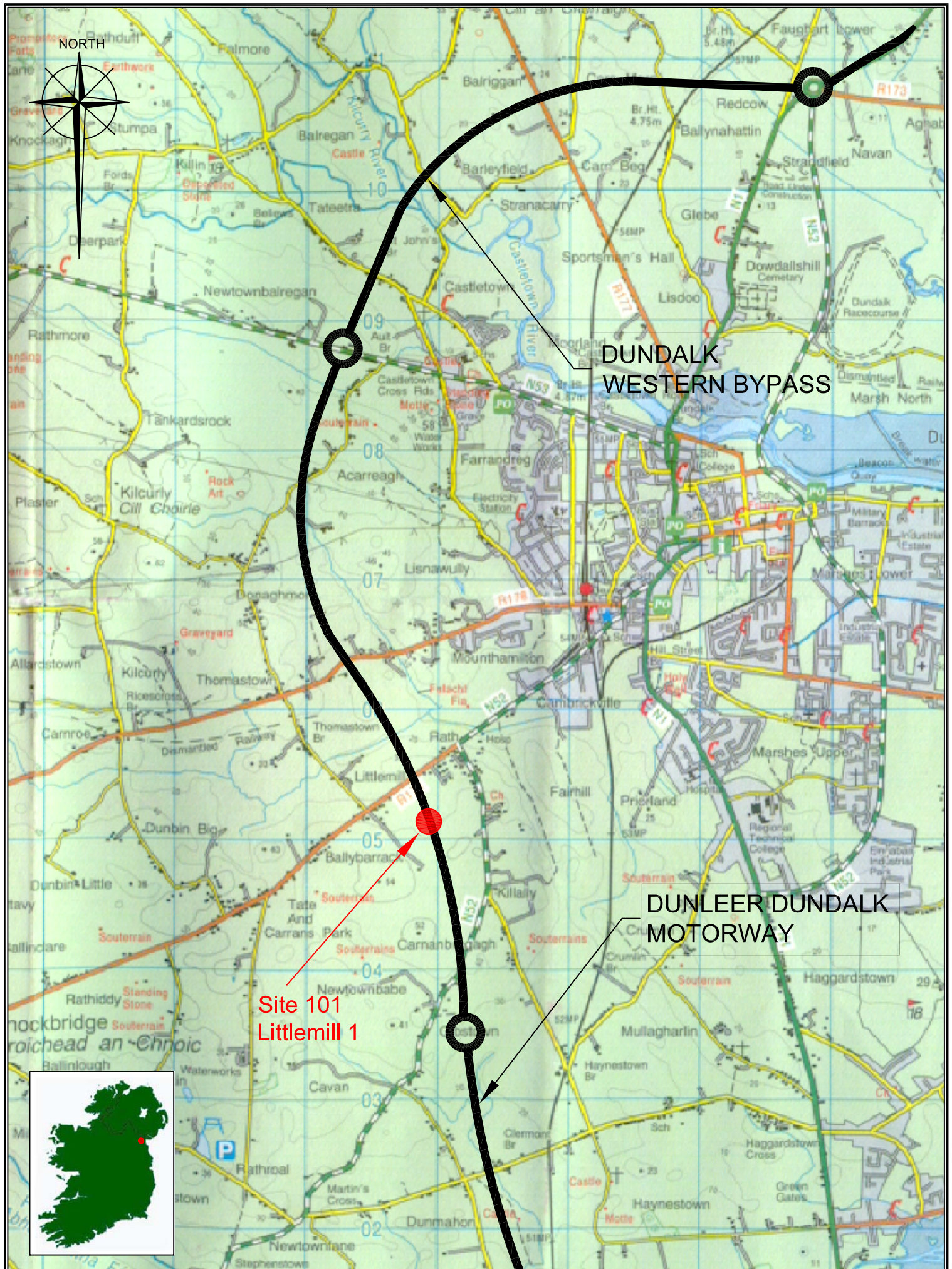
Louth County Council. 2000. 'Dundalk Western Bypass Northern Link: Environmental Impact Statement'.

Louth County Council. 1993. 'Dunleer – Dundalk Motorway Project Environmental Impact Study'. Archaeology prepared by Valerie J Keeley.

Roycroft, N. 2002. 'Dundalk western bypass: Specification for archaeological rescue excavation and other outstanding work on known sites'. NRDO, Navan.

Valerie J Keeley Ltd. 2000. 'Archaeological Assessment, Proposed Route, Western Bypass-Northern Link, Dundalk, Co. Louth'.

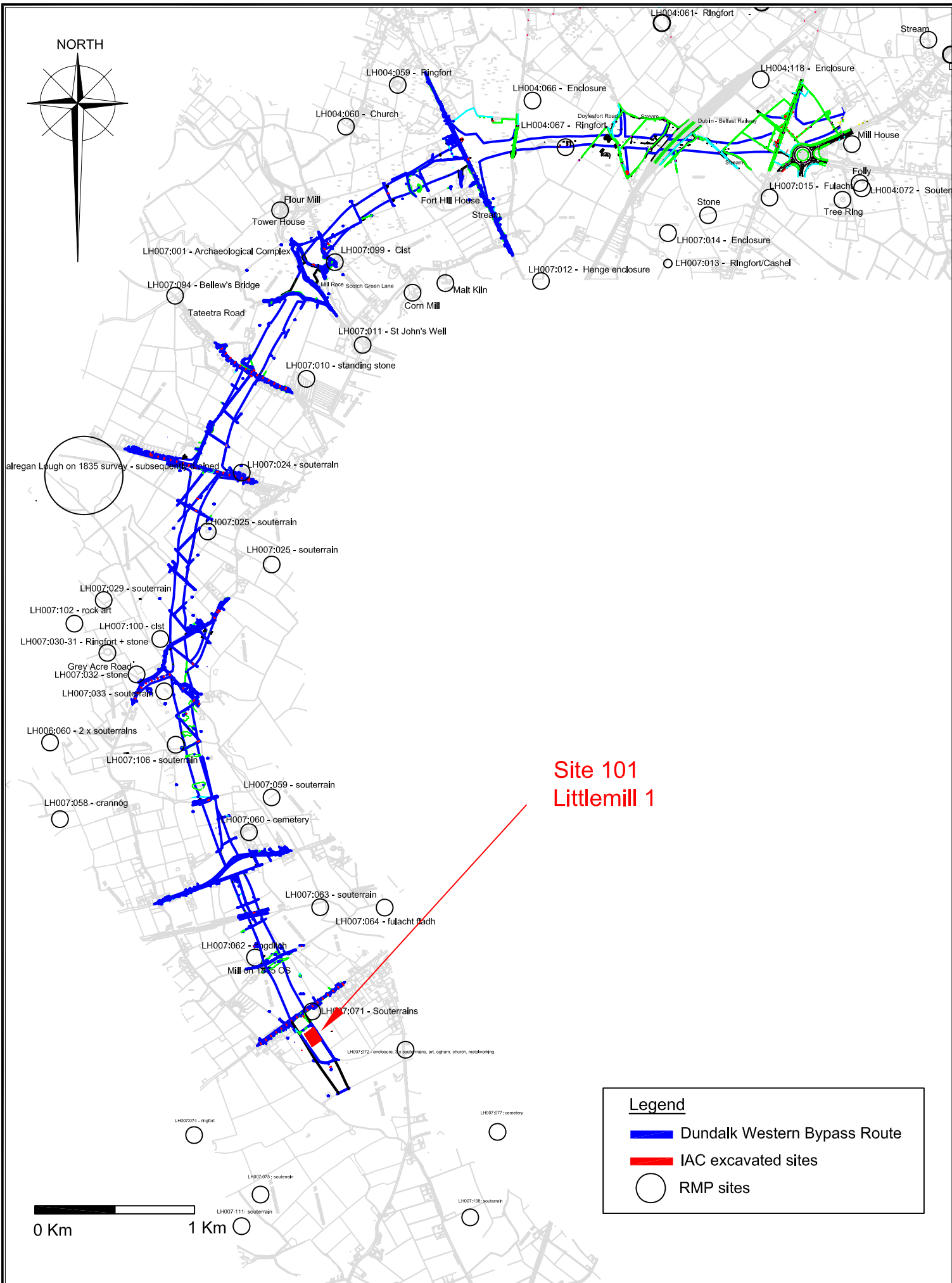
Valerie J Keeley Ltd. 1999. 'Archaeological Aerial Survey, Western Bypass, Northern Link, Dundalk, Co. Louth'.



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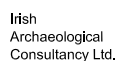
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Project: M1 Dundalk Western Bypass
Client: Louth County Council

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Job No: J2041
Figure No: 1



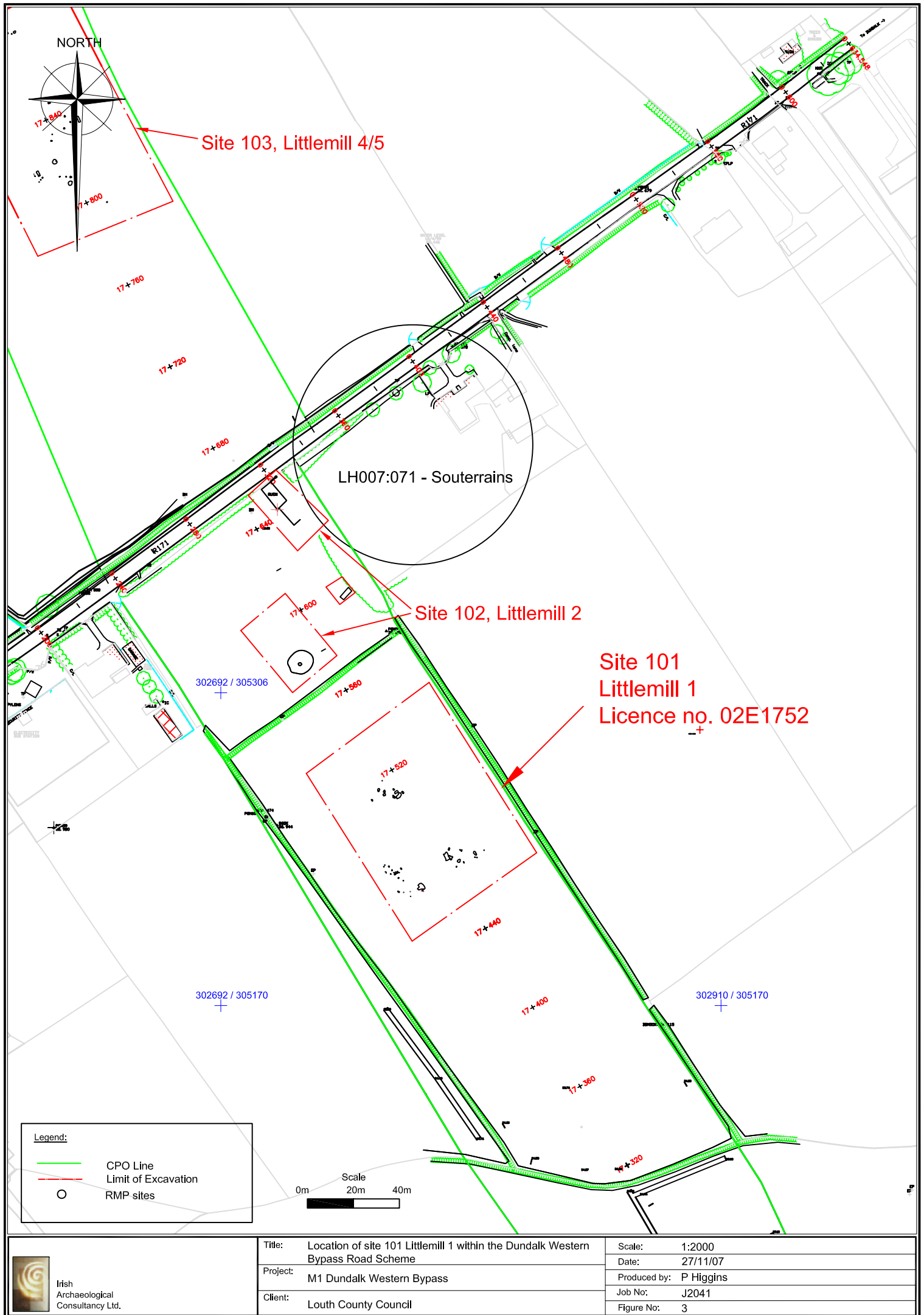
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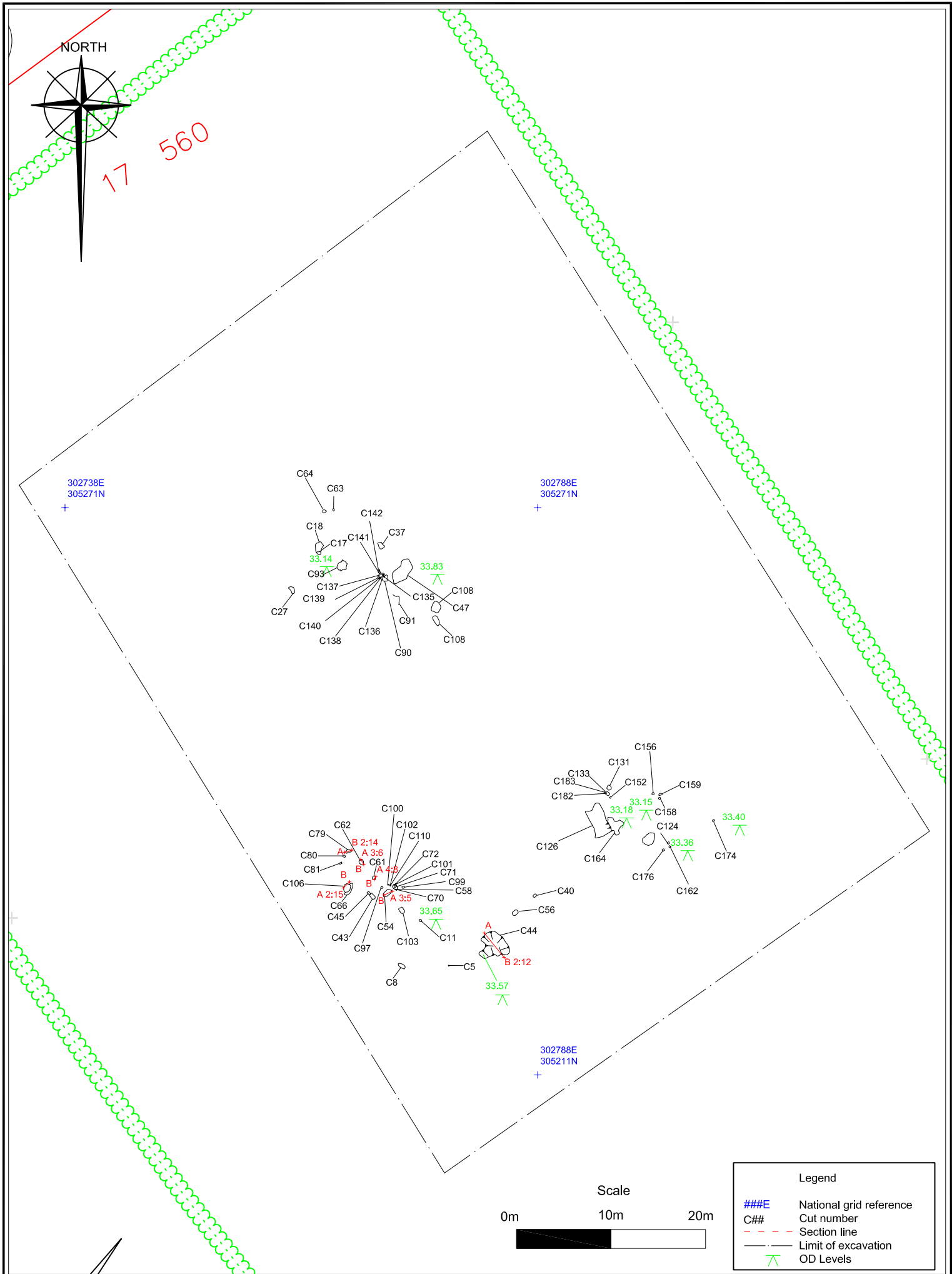
- Dundalk Western Bypass Route
 IAC excavated sites
 RMP sites



Title:	Extract from RMP map showing location of Site 101, Littlemill 1
Project:	M1 Dundalk Western Bypass
Client:	Louth County Council

Scale:	1:30000
Date:	27/11/07
Produced by:	P Higgins
Job No:	J2041
Figure No:	2

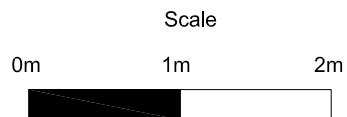
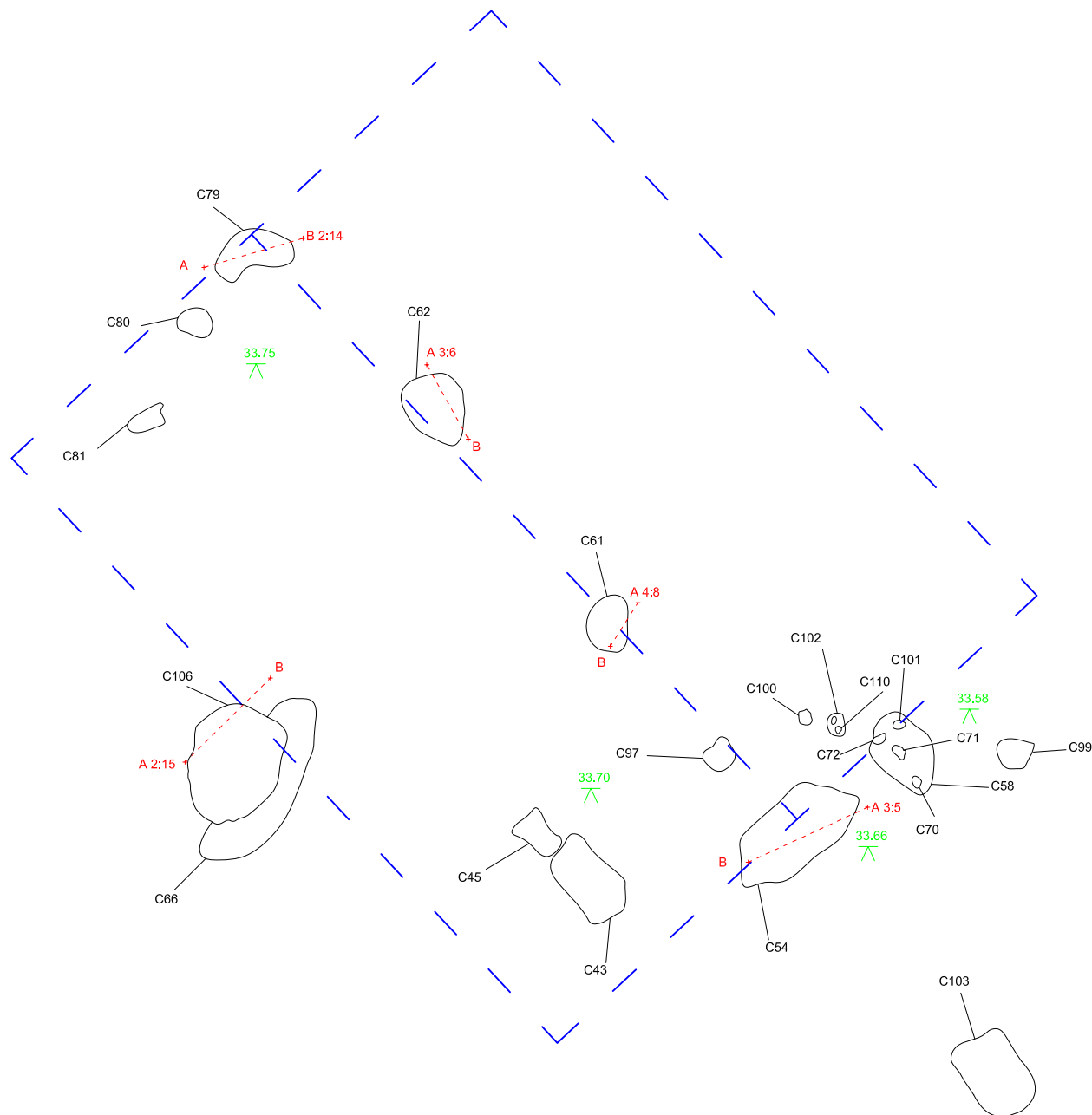
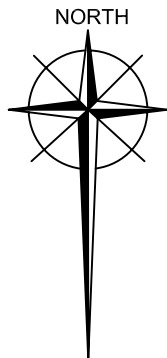




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Project: M1 Dundalk Western Bypass
Client: Louth County Council

Scale: 1:500
Date: 27/11/07
Produced by: P Higgins
Job No: J2041
Figure No: 4



Legend	
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- - -	Building Conjecture
△	OD Levels

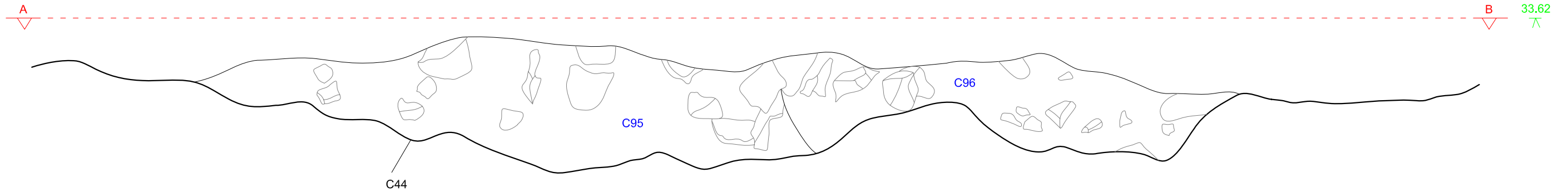


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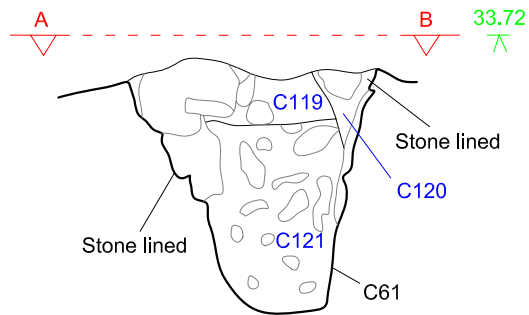
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Project:	M1 Dundalk Western Bypass
Client:	Louth County Council

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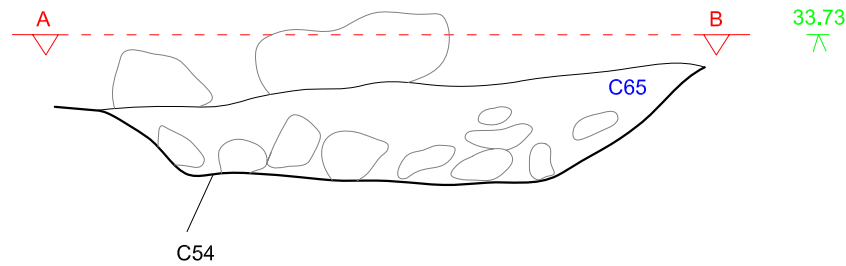
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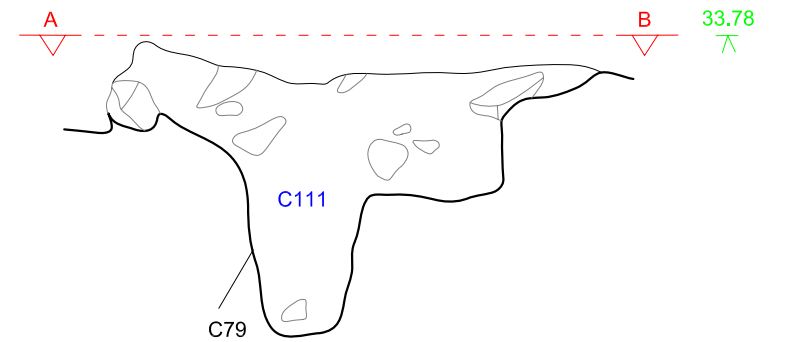
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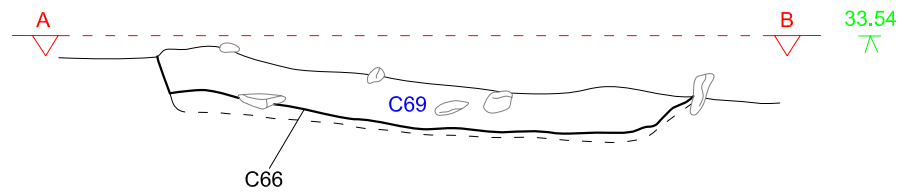
Littlemill 1
North Facing section #3:5 of C54



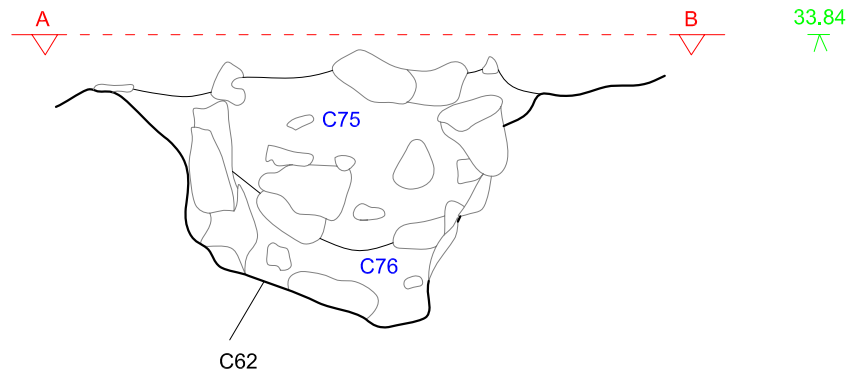
Littlemill 1
North Facing section #2:14 of C79



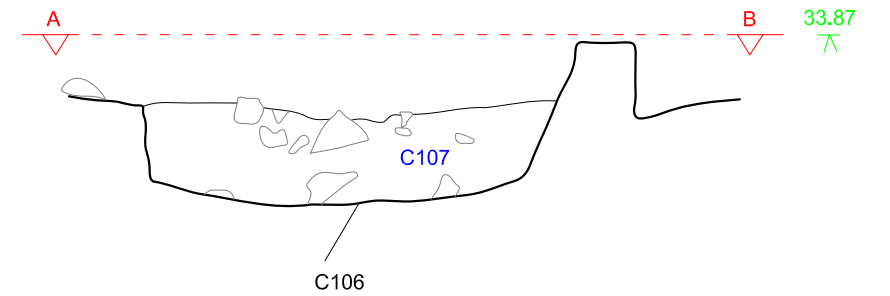
Littlemill 1
North Facing section #2:9 of C66



Littlemill 1
West Facing section #3:6 of C62



Littlemill 1
Southeast Facing section #2:15 of C106



Legend

- C## Fill numbers
- C## Cut number
- Stone
- OD Level


Title: Site 101 Littlemill 1. Sections of Group 2 (Building and Associated Features)		
Project: M1 Dundalk Western Bypass		
Client: Louth County Council	 <div>Irish Archaeological Consultancy Ltd.</div>	
Scale: 1:10		Job No: J2041
Date: 27/11/07		Figure No: 6
Produced by: P Higgins		



Plate 1 – General overhead view of Site 101, Littlemill 1 and Site 102, Littlemill 2



Plate 2 – Site 101, Littlemill 1, line of postholes with drip gully in the foreground looking south



Plate 3 – Site 101, Littlemill 1, line of postholes with packing stones



Plate 4 – Site 101, Littlemill 1, general shot looking south

APPENDIX 1: CATALOGUE OF PRIMARY DATA

Context register:

C	Type	Fill of	Filled with	Interpretation	Group	Period	Area
1	Deposit	n/a	n/a	Topsoil	5		Site
2	Deposit	n/a	n/a	Natural	1		Site
3				Non archaeological			
4				Non archaeological			
5	Cut	n/a	C13	Stakehole			10/10
6				Non archaeological			
7				Non archaeological			
8	Cut	n/a	C29	Small pit			10/10
9				Non archaeological			
10				Non archaeological			
11				Non archaeological			
12				Non archaeological			
13	Fill	C5	n/a	Deliberate deposit			10/10
14				Non archaeological			
15				Non archaeological			
16	Cut	n/a	C23	Pit			20/50
17	Cut	n/a	C25	T'd posthole	3		20/50
18	Cut	n/a	C31	Poss posthole	3		20/50
19				Non archaeological			
20				Non archaeological			
21				Non archaeological			
22				Non archaeological			
23	Fill	C16	n/a	prob nat silting			20/50
24				Non archaeological			
25	Fill	C17	n/a	prob nat silting	3		20/50
26	Fill	C27	n/a	prob nat silting	3		20/50
27	Cut	n/a	C26	Posthole	3		20/50
28				Non archaeological			
29	Fill	C8	n/a	Non archaeological			10/10
30				Non archaeological			
31	Fill	C18	n/a	Prob nat silting	3		20/50
32				Non archaeological			
33				Non archaeological			
34				Non archaeological			
35				Non archaeological			
36				Non archaeological			
37	Cut	n/a	C38	Posthole	3		20/30
38	Fill	C37	n/a	Prob nat silting	3		20/30
39	Cut	n/a	C59	Pit			30/10
40	Cut	n/a	C41	Pit	2		20/10
41	Fill	C40	n/a	Prob nat silting	2		20/10
42				Non archaeological			
43	Cut	n/a	C68	Shallow pit	2		10/20
44	Cut	n/a	C95, C96	Poss pit	2		10/20

45	Cut	n/a	C105	Pit	2		10/20
46				Non archaeological			
47	Cut	n/a	C48	Pit	3		30/50
48	Fill	C47	N/a	Deliberate deposit	3		30/50
49				Non archaeological			
50				Non archaeological			
51				Non archaeological			
52				Non archaeological			
53				Non archaeological			
54	Cut	n/a	C65	T'd posthole	2		10/20
55				Non archaeological			
56	Cut	n/a	C60	Pit	2		20/10
57				Non archaeological			
58	Cut	n/a	C73, C74	Pit	2		10/20
59	Fill	C39	N/a	Non archaeological			10/20
60	Fill	C56	N/a	Non archaeological	2		20/10
61	Cut	n/a	C119, C120, C121	Posthole (stone-lined)	2		10/20
62	Cut	n/a	C75, C76	Posthole (stone-lined)	2		10/20
63	Cut	n/a	C67	Posthole	3		30/60
64	Cut	n/a	C82	Posthole	3		30/60
65	Fill	C54	N/a	Prob nat silting	2		10/20
66	Cut	n/a	C69	Pit	2		10/20
67	Fill	C63	N/a	Prob nat silting	3		30/60
68	Fill	C43	N/a	Deliberate deposit	2		10/20
69	Fill	C66	N/a	Deliberate deposit	2		10/20
70	Cut	n/a	C74, C75	Posthole	2		10/20
71	Cut	n/a	C73	Stakehole	2		10/20
72	Cut	n/a	C73	Stakehole	2		10/20
73	Fill	C58, C70, C71, C72	N/a	Nat silting	2		10/20
74	Fill	C58, C70	N/a	Deliberate deposit	2		10/20
75	Fill	C62	N/a	Charcoal deposit	2		10/20
76	Fill	C62	N/a	Nat silting	2		10/20
77	Fill	N/a	C72	Fill	2		10/20
78				Non archaeological			
79	Cut	n/a	C111	Posthole (stone-lined)	2		10/20
80	Cut	n/a	C87	Poss stakehole	2		10/20
81	Cut	n/a	C88	Stakehole (stone-lined)	2		10/20
82	Fill	C64	N/a	Deliberate deposit	3		30/50
83				Non archaeological			
84				Void			
85				Non archaeological			
86	Cut	n/a	C89	Pit			10/30
87	Fill	C80	N/a	Nat silting	2		10/20
88	Fill	C81	N/a	Deliberate deposit	2		10/20
89	Fill	C86	N/a	Nat silting			20/30
90	Cut	n/a	C91	Linear cut	3		30/40
91	Fill	C90	N/a	Deliberate deposit	3		30/40
92	Spread			Void			

93	Cut			Void			
94	Fill	C93	N/a	Nat silting			30/40
95	Fill	C44	N/a	Fill of pit	2		20/10
96	Fill	C44	N/a	Deliberate deposit	2		20/10
97	Cut	n/a	C98	Poss posthole	2		10/20
98	Fill	C97	N/a	Poss in situ burnt post	2		10/20
99	Cut	n/a	C118	Poss stake/posthole	2		10/20
100	Cut	n/a	C145	Poss post/stakehole	2		10/20
101	Cut	n/a	C73	Poss stakehole	2		10/20
102	Cut	n/a	C143	Poss stakehole	2		10/20
103	Cut	n/a	C104	Shallow pit	2		10/20
104	Fill	C103	N/a	Poss in situ burning	2		10/20
105	Fill	C45	N/a	Nat silting	2		10/20
106	Cut	n/a	C107	Pit	2		
107	Fill	C106	N/a	Deliberate deposit	2		10/20
108	Cut	n/a	C109	Void			30/40
109	Fill	C108	N/a	Nat silting			30/40
110	Cut	n/a	C144	Poss stakehole	2		10/20
111	Fill	C79	N/a	Deliberate deposit	2		10/20
112				Non archaeological			
113				Non archaeological			
114	Cut	n/a	C115	Pit			20/30
115	Fill	C114	N/a	Deliberate deposit			20/30
116	Cut	n/a	C116	Pit or posthole			30/20
117	Fill	C116	N/a	In situ burning, under nat silting			20/20
118	Fill	C99	N/a	Deliberate deposit	2		10/20
119	Fill	C61	N/a	Poss nat silting	2		10/20
120	Fill	C61	N/a	Poss nat silting	2		10/20
121	Fill	C61	N/a	Burnt deposit	2		10/20
122				Non archaeological			
123	Cut	n/a	C130	Posthole			10/30
124	Cut	n/a	C125	Poss posthole	4		40/10
125	Fill	C124	N/a	Nat silting	4		40/10
126				Void			
127				Void			
128	Cut	n/a	C129	Pit			10/30
129	Fill	C128	N/a	Deliberate deposit			10/30
130	Fill	C123	N/a	Poss in situ burnt post			10/30
131	Cut	n/a	C132	Shallow pit	3		40/20
132	Fill	C131	N/a	Nat silting	3		40/20
133	Cut	n/a	C185	Pit w/ post+stakeholes	4		40/20
134	Fill	C135, C136, C137, C138, C139, C140, C141, C142	N/a	Nat silting	3		30/40
135	Cut	n/a	C134	Poss stakehole	3		30/40
136	Cut	n/a	C134	Stakehole	3		30/40
137	Cut	n/a	C134	Stakehole	3		30/40
138	Cut	n/a	C134	Stakehole	3		30/40

139	Cut	n/a	C134	Posthole	3		30/40
140	Cut	n/a	C134	Poss stakehole	3		30/40
141	Cut	n/a	C134	Post/stakehole	3		30/40
142	Cut	n/a	C134	Poss stakehole	3		30/40
143	Fill	C102	N/a	Poss nat silting	2		10/20
144	Fill	C110	N/a	Poss nat silting	2		10/20
145	Fill	C100	N/a	Nat silting	2		10/20
146				Same as C47			
147				Same as C48			
148	Cut	C92	n/a	Storage pit			10/40
149				Non archaeological			
150				Non archaeological			
151				Non archaeological			
152	Cut	n/a	C153	Pit	4		30/20
153	Fill	C152	n/a	Deliberate deposit	4		40/20
154	Cut	n/a	C155	Void	4		40/20
155				Void			
156	Cut	n/a	C187	Posthole	4		40/10
157				Void			
158	Cut	n/a		Poss posthole			
159	Cut	n/a		Poss posthole			
161				Non archaeological			
162	Cut	n/a	C163	Stakehole			30/10
163	Fill	C162	n/a	Nat silting			30/10
164	Cut	n/a	C165	Shallow pit			30/10
165	Fill	C164	n/a	Nat silting			30/10
168				Non archaeological			
169				Non archaeological			
170				Void			
171				Void			
172				Non archaeological			
173				Non archaeological			
174	Cut	n/a	C175	Stakehole or stone socket	4		40/10
175	Fill	C174	n/a	Void	4		40/10
176	Cut	n/a	C177	Prob stakehole	4		40/10
177	Fill	C176	n/a	Nat silting	4		40/10
178	Cut	n/a	C179	Shallow pit			30/10
179	Fill	C178	n/a	Nat silting			30/10
180	Cut	n/a	C181	Poss post hole			40/0
181	Fill	C180	n/a	Void			40/0
182	Cut	n/a	C184	Stakehole	4		40/20
183	Cut	n/a	C185	Posthole	4		40/20
184	Fill	C182	n/a	Nat silting	4		40/20
185	Fill	C183	n/a	Nat silting	4		40/20
186				Non archaeological			
187	Fill	C156	n/a	Poss in situ burning	4		40/10

Finds Register:

Find	Context	Material	Period	Comments (Pot fabric & form etc)
1:1	1	Flint		Flint scraper
1:2	1	Flint		Flint
1:3	1	Flint		Flint
1:4	1	Flint		Flint
1:5	1	Flint		Flint
1:6	1	Flint		Flint
1:7	1	Stone		Possible hammerstone
1:8	1	Flint		Flint scraper
1:9	1	Flint		Flint
1:10	1	Flint		Flint
1:11	1	Flint		Flint
1:12	1	Flint		Flint
4:1	4	Flint		Burnt Flint
65:1	65	Flint		Flint
69:1	69	Pottery		Pottery
69:2	69	Pottery		Pottery
69:3	69	Pottery		Pottery
69:4	69	Pottery		Pottery
69:5	69	Pottery		Pottery
69:6	69	Pottery		Pottery
69:7	69	Pottery		Pottery
69:8	69	Pottery		Pottery
69:9	69	Pottery		Pottery
69:10	69	Pottery		Pottery
89:1	89	Flint		Flint
95:1	95	Flint		Flint Flake
107:1	107	Pottery		Pottery frags
107:2	107	Pottery		Pottery frags
107:3	107	Pottery		Pottery frags
107:4	107	Pottery		Pottery frags
107:5	107	Pottery		Pottery frags
107:6	107	Pottery		Pottery frags
107:7	107	Pottery		Pottery frags
107:8	107	Pottery		Pottery frags
107:9	107	Pottery		Pottery frags
107:10	107	Pottery		Pottery frags
107:11	107	Pottery		Pottery frags
107:12	107	Pottery		Pottery frags
107:13	107	Pottery		Pottery frags
107:14	107	Pottery		Pottery frags
148:1	148	Pottery		Pottery
148:2	148	Pottery		Pottery
148:3	148	Pottery		Pottery
148:4	148	Pottery		Pottery
148:5	148	Pottery		Pottery

148:6	148	Pottery		Pottery
148:7	148	Pottery		Pottery
148:8	148	Pottery		Pottery

APPENDIX 2: SPECIALIST REPORTS

APPENDIX 2.1: SPECIES IDENTIFICATION OF CHARCOAL REPORT

**SPECIES IDENTIFICATION
OF CHARCOAL SAMPLES
FROM
LITTLEMILL 1 (02E1752) CO. LOUTH**

ELLEN OCARROLL

January 2006

1. INTRODUCTION

One charcoal sample was submitted for analysis from Littlemill 1, Dundalk by-pass. Littlemill 1 was located south west of Dundalk town and directly south of a series of souterrains (LH007-071). The sample retrieved for analysis was taken from a charcoal-rich fill (**C75**) associated with a building or structure possible of Neolithic in date. There was one piece of struck flint uncovered from this excavation (02E1752:65:1).

The charcoal was sent for species identification prior to ¹⁴C dating and also to give an indication of the range of tree species which grew in the vicinity. Charcoal and wood analyses may also provide information on the utilization of certain species for various functions. Wood used for fuel at pre-historic sites would generally have been grown at locations close to the site. Therefore species identifications may, but do not necessarily, reflect the composition of the local woodlands.

2. METHODS

The process for identifying wood, whether it is charred, dried or waterlogged is carried out by comparing the anatomical structure of wood samples with known comparative material or keys (Schweingruber 1990). The identification of charcoal material involves breaking the charcoal piece so that a clean section of the wood can be obtained. This charcoal is then identified to species under an Olympus SZ3060 zoom stereomicroscope. By close examination of the micro-anatomical features of the samples the species are determined. The diagnostic features used for the identification of charcoal are micro-structural characteristics such as the vessels and their arrangement, the size and arrangement of rays, vessel pit arrangement and also the type of perforation plates.

3. QUANTIFICATION/RESULTS

Table 1: Results from charcoal identifications

Site No.	Context No & Type	Sample No.	Identification	Weight & Comment
Littlemill 1 02E1752	C75 , Charcoal from Deposit. Post hole? Neolithic in date	12	Oak (Quercus sp)	14 grams

4. PROVENANCE

One charcoal sample from the fill of a posthole (**C62**) was analysed with respect to identification and function. The posthole was associated with a building measuring 5 metres in length and possibly of Neolithic date. The excavated site is located on an agriculturally productive area of land that undulates between c.20m OD and c.33m OD that surrounds Dundalk. Approximately 100m to the north of the Littlemill 1 is a bowl shaped depression where there are numerous natural springs. Such a topographical location would be ideal for agricultural habitation during any period.

A total of 14 grams of oak was identified from the posthole which probably represents the remains of the post which once stood in the posthole prior to its burning. Throughout all periods of prehistory and history oak has been used for structural timbers. The oak identified suggests that there was a supply of oak in the surrounding environment. Oak also has unique properties of great durability and strength. Sessile oak (*Quercus petraea*) and pedunculate oak (*Quercus robur*) are both native and common to Ireland. The wood of these species cannot be differentiated based on its microstructure. Pendunculate oak is found on heavy clays and loams particularly where the soil is of alkaline pH. Sessile oak is found on acid soils often in pure stands and although it thrives on well-drained soils it is also tolerant of flooding (Beckett 1979, 40-41). Both species of oak grow to be very large trees (30-40m) and can live to an age of about 400 years. The oak could have been selected from mixed woodlands nearby.

5. CONSERVATION

As oak can grow to be a very old tree (300-400 years) it is generally unsuitable for ^{14}C dating. The oak samples represent the inner part of a tree of unknown age and it was not possible to tell from identification how much larger, if at all, the whole piece was. As a result «The old-wood effect» may need to be taken into consideration when ^{14}C dates are returned (Warner 1979, 159-172). The samples identified could be of a more recent date than the rings represented on the sample. The old wood effect is particularly important in relation to later dated sites such as the transition from Early Christian to Viking to Medieval. Since the time span of pre-historic periods are wider and less transparent it is my belief that the old wood effect is not as significant when the ^{14}C dates are returned.

6. COMPARATIVE MATERIAL

Wood was a vital and widely used raw material from prehistoric to medieval times although its importance is rarely reflected in the analysis of archaeological assemblages mainly due to its perishable nature. It is important to note that people in prehistoric, Early Christian and medieval communities were mainly dependant on woodland resources for the construction of buildings and for the manufacture of most implements. The woods in a surrounding catchment area were exploited and often managed to provide an essential raw material for the community. The economic importance of wood cannot be overestimated.

A study of the range of species on an archaeological site offers an indication of the composition of a local woodland in its period of use. When some trees are felled the stool left in the ground will produce several new stems, which will grow rapidly. This type of management is known as coppicing. In many woodland areas a number of species of wood are suitable for the production of crops of long narrow stems used for fences, brushwood, hurdle trackways and wattle walls.

From the preliminary studies mentioned above it is clear that oak was the most common species used for wall-posts and planks, hazel was preferred for wattle structures and species such as ash, willow, alder, birch and holly were utilised for a variety of other structural requirements. The work carried out on species selection suggests that availability around a given catchment area was probably the main factor which influenced choice of timber.

Oak may have been selected for use as post material within F62. The use of oak as constructional material has been attested at other Neolithic sites in Ireland, particularly at Kilgobbin in Co. Dublin (03E0306, Unpublished specialist report 2005), Ballynagilly, Co. Tyrone (Pilcher & Hall 2001, 29), Monanny, Co. Monaghan (03E0888, Unpublished specialist report, 2005) Unpublished specialist report 2005) and Beaverstown, Co. Dublin (03E1364, Unpublished specialist report 2004).

7. DISCUSSION

Oak was probably consciously selected for use as post material within the Neolithic structure. Similar analyses undertaken from excavated Neolithic houses throughout Ireland have produced similar results which indicate that oak was the main constructional material prevalent in the assemblage. The oak identified indicates that a supply of such material was available in the area and it was used for certain structural requirements. The oak would have grown in drier conditions preferring free-draining soils and nutrient rich clays, although it can grow on wetter areas during dry periods.

8. REFERENCES

- Beckett, J.K., 1979, *Planting Native Trees and Shrubs*. Jarrold & Sons Ltd, Norwich.
- Pilcher, J & Hall, V. 2001. *Flora Hibernica*, The Collins press, Wilton, Cork
- Gowen, M, O'Neill, J and Phillips, M. (2005), The Lisheen Mine Archaeological Project 1996-8. Wordwell, Co. Wicklow.
- Nelson E.C., 1993 *Trees of Ireland*. The Lilliput Press, Dublin.
- Warner, R.B., 1987, "A proposed adjustment for the « Old-Wood Effect »", in Mook, W. & Waterbolk, H. (eds) *Proc. 2nd Symp of 14C & Archaeology, Groningen 1987*, 29, 159-172.
- Webb, D.A., 1977, *An Irish Flora*. Dundalgan Press Ltd, Dundalk.
- O'Carroll, E. 2004. *The analysis of charcoal remains from Kilgobbin, Co. Dublin*. Unpublished specialist report for Margaret Gowen and Company
- O'Carroll, E. 2004. *The analysis of charcoal remains from Beaverstown, Co. Dublin*. Unpublished specialist report for Margaret Gowen and Company
- O'Carroll, E. 2005. *The analysis of charcoal remains from Monanny 1, Co. Monaghan*. Unpublished specialist report for IAC
- O' Sullivan, A., 1987, "Wood in Archaeology", *Archaeology Ireland* **4**, 69-73.
- O' Sullivan, A., 1994, "The use of Trees and Woodland in early medieval Ireland", *Irish Forestry* **51**, 80-94.
- O' Sullivan, A., 1996, Neolithic, Bronze Age and Iron Age wood working techniques, in Raftery B, *Trackway excavations in the Mountdillon Bogs, Co. Longford*, 291-342.
- Rackham, O., 1976, *Trees and Woodlands in the British Landscape*. Weidenfeld & Nicholson, London.
- Rackham, O., 1980, *Ancient Woodland: its history, vegetation and uses in England*. Edward Arnold, London.
- Schweingruber, F.H. 1990. *Microscopic Wood Anatomy*. 3rd edition. Birmensdorf: Swiss Federal Institute for Forest, Snow and Landscape Research

Appendix 2.2: RADIOCARBON DATING REPORT

The University of Waikato Radiocarbon Dating Laboratory
One C 14 date was established for the site at Littlemill 1

The un-calibrated result is as follows:

Wk18552	Littlemill 1; 02E01752: (C75), Oak Charcoal (14g)
dC13	-26.4+/-0.2
% modern	52.6+/-0.3
Result	5168+/-52 BP

The calibrated results were processed using the Intcal 04 calibration curve. The result (95.4% probability) was as follows:

Wk18552	Littlemill 1; 02E01752: (C75), Oak Charcoal (14g) Cal BC 4070 – 3790BC (92.4% probability)
---------	------------------------------------------------------------------------------------------------------

Intcal 04 reference: Reimer, P. J., Baillie, M. G. L., Bard, E., Bayliss, A., Beck, J. W., Bertrand, C. J. H., Blackwell, P. G., Buck, C. E., Burr, G. S., Cutler, K. B., Damon, P.E., Edwards, R. L., Fairbanks, R. G., Friedrich, M., Guilderson, T. P., Hogg, A. G., Hughen, K. A., Kromer, B., McCormac, G., Manning, S., Bronk Ramsey, C., Reimer, R. W., Remmele, S., Southon, J. R., Stuiver, M., Talamo, S., Taylor, F. W., van der Plicht, J., Weyhenmeyer, C. E., IntCal04 Terrestrial Radiocarbon Age Calibration, 0 - 26 ka cal BP, *Radiocarbon* 46 (nr 3, 2004).

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Radiocarbon Dating Laboratory



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Head: Dr Alan Hogg

Report on Radiocarbon Age Determination for Wk-

18552

Submitter Ii Johnston
Submitter's Code LittleMill 1/7512
Site & Location Dundalk Western Bypass, Ireland
Sample Material Oak
Physical Pretreatment Possible contaminants were removed. Washed in ultrasonic bath.
Chemical Pretreatment Sample washed in hot 10% HCl, rinsed and treated with hot 0.5% NaOH. The NaOH insoluble fraction was treated with hot 10% HCl, filtered, rinsed and dried.

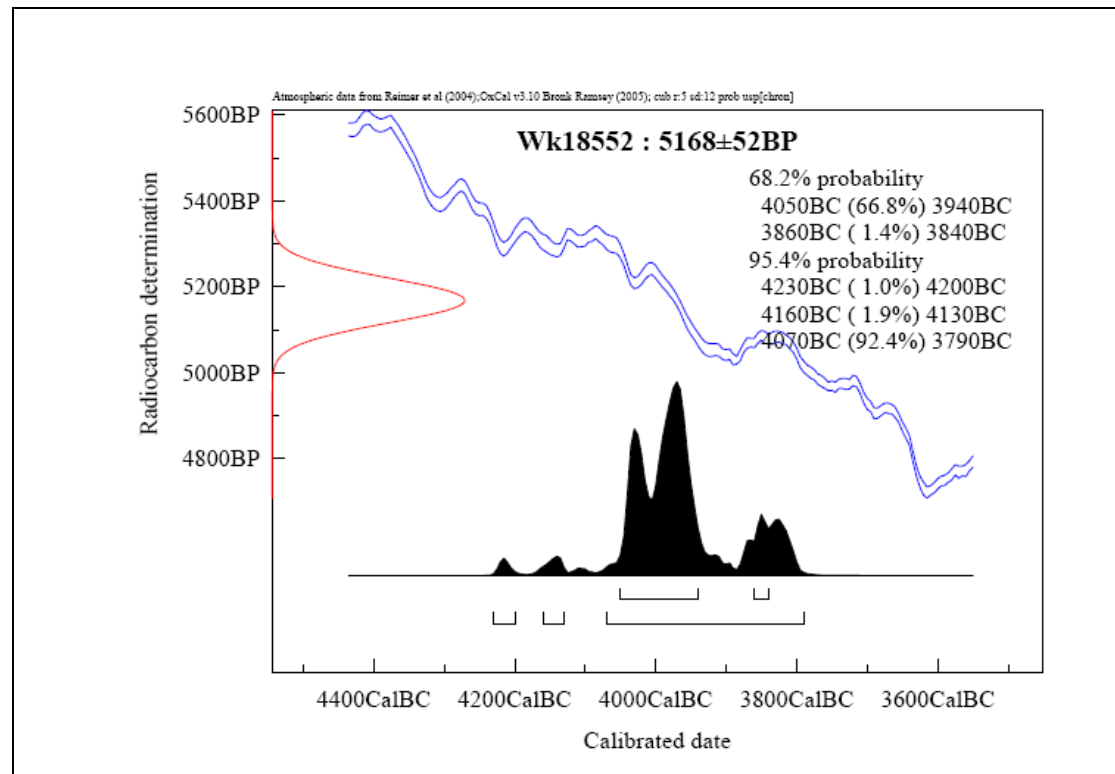
$\delta^{14}\text{C}$	-476.0 ± 3.4	‰
$\delta^{13}\text{C}$	-26.4 ± 0.2	‰
D^{14}C	-474.5 ± 3.4	‰
% Modern	52.6 ± 0.3	%

Result **5168 ± 52 BP**

Comments

Alan Hogg
3/5/06

- Result is *Conventional Age* or *% Modern* as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier of 1.
- The isotopic fractionation, $\delta^{13}\text{C}$, is expressed as ‰ wrt PDB.
- Results are reported as *% Modern* when the conventional age is younger than 200 yr BP.



Appendix 2.3: LITHIC REPORT

CHIPPED STONE AND WORKED STONE ASSEMBLAGE ANALYSIS REPORTS AND CATALOGUES FOR LITTLEMILL 1 (02E01752)

**DR EIMÉAR NELIS
MA PHD MIAI**

CHIPPED FLINT AND NON-FLINT ASSEMBLAGE

Introduction

In total, 15 flint artefacts were recovered during excavations at Site 101, Littlemill 1 (02E1752), which was located 2km to the southwest of Dundalk (Ó Donnchadha 2006d). These are catalogued below (Table 1).

Unique No	Basic Character	Classification	Condition	Cortex	Fragment size (mm)	Length (mm)	Breadth (mm)	Thickness (mm)	Mass (g)
02E1752:1:1	Flake	Complete bipolar	Fresh	Secondary	0	25	20	3	1.53
02E1752:1:2	Core	Flaked pebble	Fresh	Secondary	0	28	24	16	10.42
02E1752:1:3	Flake	Flake shatter proximal	Patinated	Tertiary	22	0	31	8	5.11
02E1752:1:4	Flake	Flake shatter medial	Patinated	Tertiary	25	0	35	6	4.92
02E1752:1:5	Flake	Indeterminate shatter	Patinated	Tertiary	18	0	14	3	1.14
02E1752:1:6	Flake	Flake shatter medial	Patinated	Tertiary	16	0	25	3	1.36
02E1752:1:8	Flake	Blade shatter distal	Fresh	Secondary	35	0	22	7	6.83
02E1752:1:9	Flake	indeterminate shatter	Burnt	Tertiary	25	0	15	3	1.11
02E1752:1:10	Unworked	Thermal damage	Abraded	Secondary	0	28	22	18	8.22
02E1752:1:11	Angular shatter	Knapping debris	Abraded	Tertiary	0	15	14	6	1.15
02E1752:1:12	Unworked	Abraded lump lump	Abraded	Secondary	0	42	25	14	17.60
02E1752:4:1	Flake	indeterminate shatter	Burnt	Tertiary	0	12	6	2	0.08
02E1752:65:1	Unworked	Thermal flake	Abraded	Tertiary	0	12	8	3	0.45
02E1752:89:1	Unworked	Thermal flake	Burnt	Secondary	0	22	14	8	1.67
02E1752:95:1	Modified	Edge retouched	Fresh	Tertiary	0	25	15	1	0.84

Table 1: Dundalk Western Bypass: Littlemill 1 (02E1752): showing basic composition of the flint assemblage.

The assemblage is mainly comprised of primary knapping debitage (ie cores, flake debitage, angular shatter: 10/15 pieces); most of the remaining pieces were unworked (4/15 pieces), and a single modified tool was recovered (1/15 pieces) (Table 1).

General provenance of assemblage

The bulk of the assemblage derived from topsoil ([C1]: 11/15 pieces), including the majority of the flake debitage assemblage, and one-half of the unworked material. A single flake was recovered from a deposit deemed to be non-archaeological [C4].

Context No	Description	Unworked	Core	Flake Debitage	Angular shatter	Modified	TOTAL
1	Topsoil	2	1	7	1	-	11
4	Non-archaeological	-	-	1	-	-	1
65	Group 2: Building 1: posthole	1	-	-	-	-	1
89	Fill of pit C86: unlocated	1	-	-	-	-	1
95	Group 2: Building 1: possible refuse pit	-	-	-	-	1	1
	TOTAL	4	1	8	1	1	15

Table 2: Dundalk Western Bypass: Littlemill 1 (02E1752): showing distribution and basic composition of the flint assemblage.

In addition to these, an unworked piece was found in [C65], the fill of the posthole [C54] (forming part of a possible Neolithic rectangular structure: Building 1: Ó Donnchadha 2006d); another piece, the modified tool (02E1752:95:1), may also have been associated with this structure, and was found in [C95], the fill of a possible refuse pit [C44]. The remaining piece was unworked, and derived from the fill [C89] of a pit [C86] (unlocated).

Assemblage summary and discussion

The assemblage included, in the main, flake debitage (8/15 pieces), the majority of which was fragmentary (7/8 pieces), but seemed to be the product of platform reduction; the remaining flake was produced through bipolar methods, a technology which was also represented by the core, although the two pieces did not derive from the same knapping episode. Within the flake debitage, core and modified tool assemblage, no refit groups were discernable. The source of the bulk of the assemblage remains indeterminate, but two pieces, the core (02E1752:1:2) and a distal blade fragment (02E1752:1:8), were derived from beach pebbles.

None of the artefacts could be seen as strong chronological indicators, although all are compatible with Neolithic and Bronze Age phases of activity; the modified tool (02E1752:95:1) was minimally modified and utilised as a cutting tool, making use of its naturally sharp edges. The condition of the assemblage was variable, with no particular trends: similar numbers of fresh (4/15 pieces), patinated (4/15 pieces) and abraded (4/15 pieces) material was found, and burnt artefacts were also recovered (3/15 pieces). Topsoil artefacts survived in fresh, patinated and abraded conditions, with burnt material being found in C1, C4 and C89. Notably, the artefact recovered from the possible refuse/cremation pit fill (C95) was in a fresh condition. The analysis of such a small quantity of artefacts affords only limited potential for comment on the nature of the chipped stone industry in evidence at Littlemill 1, but some comment can be made on the primary and secondary technology present. Bipolar technology (ie bashing or splintering, on a hard surface/anvil) was evidenced by the core (02E1752:1:2) and a complete flake (02E1752:1:1), but was not obviously evident within the flake shatter assemblage, and was not apparent in the production of the modified tool. Bipolar techniques tend to allow for less control in the knapping process, whereas platform reduction methods usually involve a greater degree of control and/or planning, leading to greater predictability in the outcome of the knapping process.

While bipolar technology can point to expediency and opportunism within the industry, it does not necessarily indicate a lack of knapping skill (Nelis 2003). In an

Irish context, bipolar methods are commonly found where raw material is limited, and tends to be applied to diminutive pebbles or lumps, where platform techniques may not be feasible. Such methods have traditionally been seen as being confined to the Bronze Age in Ireland, but in fact are found throughout the Neolithic where flint resources are limited. The juxtaposition of bipolar and platform reduction techniques is a common occurrence throughout the Irish Neolithic and Bronze Age, and points to multiple knapping events within a single assemblage, dictated by changes in either the availability of material and/or the imperatives behind the raw material reduction and tool production. The fragmentary condition of the remainder of the flake debitage assemblage limits the ability to comment on the nature of the platform reduction methods found at Littlemill 1, but the technology behind the production of the modified tool is worthy of comment: this piece has been utilised, rather than extensively modified by secondary retouch, but it is of interest that the flake upon which the tool is based exhibits a very high degree of knapping skill and control in its production, and it is unrelated to the remainder of the worked flint assemblage. It is an exceptionally fine flake (with a thickness of just 1-2mm), and appears to have been produced through indirect percussion; it is possible that the piece is a bifacial thinning flake, derived from the production of a large bifacial tool, such as a flaked axe or laurel leaf. During the Irish Neolithic, it is possible that such bifacial tools were sometimes used as curated cores (eg Lyles Hill, Co Antrim; Thornhill, Co Derry: Nelis 2003). It may be, therefore, that this piece was curated to Littlemill 1, ultimately deriving from a larger bifacial tool or core, which may itself have been extensively curated.

Bibliography

- Nelis, E. 2003. *Lithics of the Northern Irish Neolithic*. Unpublished PhD thesis. Belfast: Queen's University, Belfast.
- Ó Donnchadha, B. 2006d. *M1 Dundalk Western Bypass: Site 101: Littlemill 1: 02E1833: Stratigraphic report*. Dublin: IAC Ltd.

APPENDIX 2.4: PREHISTORIC POTTERY REPORT

THE PREHISTORIC POTTERY
FROM
LITTLEMILL 1, CO. LOUTH
(02E1752)

EOIN GROGAN AND HELEN ROCHE

1 Summary

The Littlemills site produced the very fragmented remains of at least two vessels - an early Neolithic Carinated Bowl, and a Middle Neolithic Impressed Ware Vessel, possibly a Broad Rimmed Bowl.

The Early Neolithic

A single fine vessel of good thin-walled fabric with a burnished finish is represented. Although there are no feature sherds present it is probable that this pottery represents the earliest type of Neolithic pottery (Case 1961: 'Dunmurry-Ballymarlagh styles'; Sheridan 1995: 'classic' Carinated bowls).

At a regional level the house fits in very well with an important concentration of early Neolithic settlement in north Leinster. In addition to the major settlement with two early Neolithic phases at Knowth, Co. Meath (Eogan 1984; Eogan and Roche 1997), there is also settlement evidence at Newgrange (O'Kelly *et al.* 1978) and Feltrim Hill, Co. Dublin (Hartnett and Eogan 1964). A small quantity of this pottery comes from Sites 2 and 5, as well as the 'trial cuttings' at Dalkey Island, Co. Dublin (Liversage 1968). New facets of this distribution include several new rectangular house sites in Meath, Kildare and Louth (Grogan 2004; O'Donovan 2003-2004), as well as pottery from other domestic activity at the Hill of Rath, Co. Louth (Duffy 2002), Oldbridge (Campbell 2002), Newtownbalregan 6 and Donaghmore 1a, Co. Louth (Bayley 2004; Grogan and Roche 2005a; Ó Donnchadha 2002; Grogan and Roche 2006a).

The Middle Neolithic

There is a single vessel with a club rim that has a pronounced inward projection and, probably, a slight cavetto neck. The surfaces are well finished but the fabric is extremely friable. There is no evidence for decoration – an unusual feature for this vessel type. This is a Broad Rimmed bowl. These are generally deep hemispherical bowls with a broad flat, or curved rim and a short, frequently constricted (cavetto), neck (Case 1961: 'Dundrum bowls'; Herity 1982: 'Broad-Rimmed Vessels'); the rim top often has a pronounced outward slope that projects over the wall. Decoration is common on the rim top but less so on the remainder of the pot. While they are found in a wide variety of contexts the majority of this pottery type has come from domestic contexts. This specific type, medium to small vessels with broad, flat or round topped, rims with a pronounced outward projection, constricted necks and rounded, closed¹, profiles occurs at Townleyhall 2, Co Louth, but those pots have rim decoration of circumferential and radial lines of cord (Eogan 1963, fig. 7.5-7). A similar vessel, also decorated, came from Balregan 1 (Ó Donnchadha 2003a; Grogan and Roche 2005b, fig. 3.20).

This pottery forms part of the widespread emergence of an Impressed Ware tradition in Ireland and Britain during the middle Neolithic (Gibson 2002, 78-82; Grogan and Roche 2005, fig. 4). The pottery at Littlemill fits very comfortably into the main concentration of this material in the east Ulster/north Leinster region and forms part of an important group of sites in Louth that includes Townleyhall 2, Balregan 1, Newtownbalregan 6, Littlemill 4/5, Donaghmore 1 and 4 (Bayley 2004; Ó Donnchadha 2003b; Grogan and Roche 2005b; 2006b; 2006c; 2006d).

CATALOGUE

The excavation number 02E1752 is omitted throughout; only the context number followed by the find number is included.

¹ Closed: the rim diameter is less than that of the widest part of the body.

Where the pottery is listed in the catalogue the context numbers are in bold: e.g.: [C69].1-2.

Numbers in square brackets (e.g. [C69], [4-5]) indicate that the sherds are conjoined. The thickness refers to an average dimension; where relevant a thickness range is indicated.

Vessel numbers have been allocated to pottery where some estimation of the form of the pot is possible, or where the detailed evidence of featured sherds (e.g. rims, shoulders) or the fabric, indicate separate vessels.

Early Neolithic Carinated Bowl, context [69]

Vessel 1. This is represented by 5 sherds (3 necksherds: [C69], [4-5], 6; 2 bodysherds: [C69].1-2) from a medium sized fine vessel of compact fabric with a dark grey external surface and core and a dark grey to red-buff inner face: the neck has been burnished. There is a low content of crushed and uncrushed quartzite inclusions ($\leq 1.5\text{mm}$). Neck thickness: 4.5mm; body: 9.5mm).

Middle Neolithic Broad Rimmed bowl, context [148/107]

Vessel 2. This is represented by 8 sherds (3 rimsherds: [C146], [4, 7-8] + rim fragments [C148].1-3; 2 necksherds: [C107].2-3; 3 bodysherds: [C107].1, 4, 14; 9 neck/body fragments: [C107].5-13). The sharply inverted rim has a broad domed top (31.8mm) this is outward sloping above a probable cavetto neck. The fabric is very friable and has a medium content of crushed dolerite inclusions (6 x 6mm, up to 9 x 7.5mm). It has very smooth grey buff surfaces and a dark grey core. There is no indication of decoration. Body thickness: 6.2mm.

Bibliography

Bayley, D. 2004 M1 Dundalk Western Bypass. Newtownbalregan Excavations: Sites 111, 112 and 113: Post-Excavation Assessment and Project Design. Unpublished Report for Irish Archaeological Consultancy Ltd.

Campbell, K. 2002 Oldbridge 1, Neolithic pit, Co. Meath. In I. Bennett (ed.) Excavations 2000, 262. Wordwell, Dublin.

Case, H. 1961 Irish Neolithic Pottery: Distribution and Sequence, *Proceedings of the Prehistoric Society* 9, 174-233.

Duffy, C. 2002 Hill of Rath, Prehistoric complex, Co. Louth. In I. Bennett (ed.) Excavations 2000, 231-3. Wordwell, Dublin.

Eogan, G. 1963 A Neolithic Habitation-Site and Megalithic Tomb in Townleyhall Townland, Co. Louth, *Journal of the Royal Society of Antiquaries of Ireland* 93, 37-81.

Eogan, G. 1984 *Excavations at Knowth 1*. Royal Irish Academy Monographs in Archaeology, Dublin.

Eogan, G. and Roche, H. 1997 *Excavations at Knowth 2*. Royal Irish Academy Monographs in Archaeology, Dublin.

Gibson, A. 2002 *Prehistoric Pottery in Britain and Ireland*. Tempus, Stroud.

- Grogan, E. 2004 The implications of Irish Neolithic houses. In I. Shepard and G. Barclay (eds) *Scotland in Ancient Europe*, 103-114. Society of Antiquaries of Scotland, Edinburgh.
- Grogan, E. and Roche, H. 2005a The prehistoric pottery from Newtownbalregan 6, Co. Louth. Unpublished Report, Irish Archaeological Consultancy Ltd.
- Grogan, E. and Roche, H. 2005b The prehistoric pottery from Balregan 1, Co. Louth (03E0157). Unpublished Report for Irish Archaeological Consultancy Ltd.
- Grogan, E. and Roche, H. 2006a The prehistoric pottery from Donaghmore 1a, Co. Louth (02E1330). Unpublished Report for Irish Archaeological Consultancy Ltd.
- Grogan, E. and Roche, H. 2006b The prehistoric pottery from Littlemills 4/5, Co. Louth (02E1833). Unpublished Report for Irish Archaeological Consultancy Ltd.
- Grogan, E. and Roche, H. 2006c The prehistoric pottery from Donaghmore 1, Co. Louth (02E1330). Unpublished Report for Irish Archaeological Consultancy Ltd.
- Grogan, E. and Roche, H. 2006d The prehistoric pottery from Donaghmore 4, Co. Louth (02E1331). Unpublished Report for Irish Archaeological Consultancy Ltd.
- Hartnett, P.J. and Eogan, G. 1964 Feltrim Hill, Co. Dublin: A Neolithic and Early Christian Site, *Journal of the Royal Society of Antiquaries of Ireland* **94**, 1-37.
- Herity, M. 1982 Irish Decorated Neolithic Pottery, *Proceedings of the Royal Irish Academy* **82C**, 10-404.
- Liversage, G.D. 1968 Excavations at Dalkey Island, Co. Dublin, 1956-1959, *Proceedings of the Royal Irish Academy* **66C**, 53-233.
- Ó Donnchadha, B. 2002 M1 Dundalk Western Bypass. Donaghmore Excavations: Sites 108, 109, 110 and 131. Unpublished Report for Irish Archaeological Consultancy Ltd.
- Ó Donnchadha, B. 2003a M1 Dundalk Western Bypass. Site 116, Balregan 1 and 2. Unpublished Report for Irish Archaeological Consultancy Ltd.
- Ó Donnchadha, B. 2003b M1 Dundalk Western Bypass. Site 103: Littlemill 4 and 5. Unpublished Report for Irish Archaeological Consultancy Ltd.
- O'Donovan, E. 2003-2004 A Neolithic house at Kishoge, Co. Dublin, *Journal of Irish Archaeology* **12/13**, 1-27.
- O'Kelly, M.J., Lynch, F. and O'Kelly, C. 1978 Three passage-graves at Newgrange, Co. Meath, *Proceedings of the Royal Irish Academy* **78C**, 249-352.
- Sheridan, A. 1995 Irish Neolithic pottery: the story in 1995. In I. Kinnes and G. Varndell (eds) *Unbaked Urns of Rudely Shape*, 3-21. Oxbow Monograph **55**, Oxford.

APPENDIX 2.5: ANIMAL BONE REPORT

OSTEOLOGICAL REPORT OF FAUNAL REMAINS FROM 02E1752 SITE 101: LITTLEMILLS 1 CO. LOUTH M1 DUNDALK WESTERN BYPASS

**AUTHOR: AOIFE MCCARTHY MA BA
DATE: JULY 2009**

TABLE OF CONTENTS

1. INTRODUCTION
 - 1.1 INTRODUCTION
 - 1.2 GENERAL OSTEOLOGICAL INFORMATION
2. METHODOLOGY
3. RESULTS
4. SUMMARY
5. BIBLIOGRAPHY

PLATES

TABLES:

- Table 1. Total number of bone fragments, anatomical units (MNE) and the total weight identified to species (**C107**).
- Table 2. Total number of bone fragments, anatomical units (MNE) and the total weight identified to species (**C95**).
- Table 3. Total number of bone fragments, anatomical units (MNE) and the total weight identified to species (**C95**).
- Table 4. Total number of bone fragments, anatomical units (MNE) and the total weight identified to species (**C111**).
- Table 5. Number of fragments from entire assemblage with cut; gnaw marks evidence of pathology or burning/heat exposure.

1. INTRODUCTION

1.1 INTRODUCTION

This report details the osteological analysis of bones recovered during excavations at Site 101, 02E1752 Littlemills 1 in the townland of Littlemill c. 2km to the south-east of Dundalk, Co. Louth in advance of the construction of the Dundalk Western Bypass (DWB). Aoife McCarthy MA (Osteoarchaeology University of Southampton 2006) undertook the analysis on behalf of Irish Archaeological Consultancy Ltd. in August 2009.

1.2 GENERAL OSTEOLOGICAL INFORMATION

The osteological analysis of bones recovered from Site 101 was undertaken to provide an overview of the osteoarchaeological aspect of the site and determine if the material could provide further interpretation of site activity. A total of 119 fragments from 27 possible anatomical units were recorded within the assemblage. All 119 of the bone fragments displayed evidence of burning. The bones were in a very poor state of preservation and weighed a total of 18.20g. Due to the fragmented nature and small size of the bone pieces recovered, as well as a poor level of preservation the majority of the assemblage was unidentifiable to species. The faunal remains assemblage contained bones from one recognisable species *sus/pig*. The data collected within this report was based on species identification (where possible), ageing, and sexing (where possible), butchery, gnawing, burning pathology or injury.

2. METHODOLOGY

SPECIES IDENTIFICATION: Identification of the bones involved reference to Schmid (1972) and Hillson (1992) as well as comparison with the author's own reference material.

- **NISP:** Number of Identified Specimens Indicates the total number of fragments found.
- **MNI:** Minimum Number of Individuals. Indicates the minimum number of individuals from every species that were present in the material. The MNI is calculated on the specimen of the most abundant skeletal element present. The MNI is only an estimate.
- **MNE:** Minimum Number of Elements. Indicates the minimum number of anatomical units that are present and what side they are from. To avoid getting a higher MNE all loose epiphyses have to be paired with all unfused diaphysis.

AGEING: Two main methods are used to determine the age of faunal remains; tooth eruption and degree of epiphyseal fusion (a less reliable method). Tooth eruption and wear stages were recorded for the following teeth where possible; dP4 (deciduous fourth premolar), P4 (fourth premolar), M1 (first molar), M2 (second molar) and M3 (third molar) of cattle, sheep/goat and pig (Grant 1982). The analysis of tooth wear patterns refers to the alteration of the enamel surface and exposure of inner dentine through use.

BIOMETRICAL DATA: Due to the degree of fragmentation of the faunal remains recovered from Site 101 02E1752 Littlemills 1 measurements were not taken.

SEX DETERMINATION: Sex determination of animal remains is possible by analysis of certain sexually dimorphic elements. For example goat horncores may be classified as male or female based on their morphology and cattle metacarpals can be defined as male or female through calculation of the slenderness index (McCormick 1992). Sexual determination of species was not possible due to the degree of fragmentation of the assemblage.

BUTCHERY/GNAWING/BURNING: Evidence for butchery was recorded under the categories of cut, chopped, chopped and cut. All specimens were analysed for evidence of rodent or carnivorous gnawing and evidence of burning.

PATHOLOGY: The discovery of any injury and/or pathology was recorded for all specimens, where present.

3. RESULTS

Context 107 Sample 17:

A total of nine tiny burnt bone fragments (0.30g) were recovered within (**C107**) the loose silty fill of [**C106**] a rectangular feature. Due to the fragmented nature of the material it was not possible to discern species.

Unidentified Fragments

Due to a high level of fragmentation and small size the nine fragments of burnt bone recovered from (**C107**) were unidentified to species. The long bone and possible rib fragments (0.30g) represent two anatomical units. All of the bone fragments (0.30g) displayed white discolouration and alteration in bone texture indicating exposure to a high level of heat. When bone is exposed to heat the process of decomposition of organic elements is accelerated (Luff R. & Pearce J. 1994). This accelerated mineralisation is manifested on bone surface as a glossy grey-white surface (Luff R. & Pearce J. 1994).

Group	No. Fragments	% Fragments	MNE	Weight (g)	Weight %
Unidentified Fragments	9	100%	2	0.30g	100%
Total	9	100%	2	0.30g	100%

Table 1. Total number of bone fragments, anatomical units (MNE) and the total weight identified to species (**C107**).

Context 95 Sample 31:

A total of seventeen burnt bone fragments (6.7g) representing six possible anatomical units were identified within (**C95**) the charcoal rich fill of sub-circular feature [**C44**]. Due to the fragmented nature and small size of the faunal material it was not possible to identify species

Unidentified Fragments:

Due to a high degree of fragmentation the seventeen fragments of burnt bone recovered from (**C95**) were unidentified to species. The possible skull, long bone diaphysis and unidentified fragments (6.7g) represent six possible anatomical units. All of the bone fragments displayed greying at the margins as well as white discolouration of the bone surface, indicating exposure to heat. The structure of bone changes through exposure to heat. Contact of bone with heat diminishes its moisture content and results in the combustion of the organic or collagen component; the remaining structure of the bone after this process is mineral. Such distortion to the bone structure reduces its size and as detailed above alters bone colour (Luff R. & Pearce J. 1994).

Four of the burnt bone fragments displayed evidence of possible butchery in the form of cut or scrape marks. However, due to distortion of the bone surface caused by exposure to heat it is possible that the marks are cracks resulting from loss of its organic content. It is also possible that the shallow striations visible on the four bone fragments were formed by taphonomic processes such as trampling. Experiments in trampling undertaken by Olsen & Shipman (1988) produced very fine shallow striations on long bone fragments.

Group	No. Fragments	% Fragments	MNE	Weight (g)	Weight %
Unidentified Fragments	17	100%	6	6.7g	100%
Total	17	100%	6	6.7g	100%

Table 2. Total number of bone fragments, anatomical units (MNE) and the total weight identified to species (C95).

Context 95 Sample 14:

A total of eighty three small burnt bone fragments (10.3g) representing eighteen possible anatomical units were identified within (C95) the charcoal rich fill of sub-circular feature [C44]. Seven of the eighty three burnt bone fragments recovered from (C95) were identified as *sus*/pig metapodia and phalanx. The small-tiny size of the remaining seventy six burnt bone fragments, as well as the degree of fragmentation meant it was not possible to identify species.

Sus/Pig

Seven burnt fragments of *sus*/pig metapodia and phalanx (1.7g) representing one anatomical unit were identified and recorded in moderate to poor state of preservation within fill material (C95).

Unidentified Fragments:

Due to its very fragmented nature the remaining seventy six burnt bone fragments recovered from (C95) were not identified to species. The possible skull, rib and unidentified fragments (8.6g) representing seventeen possible anatomical units. All of the bone fragments recovered from (C95) were discoloured to grey-white indicating exposure to heat.

Group	No. Fragments	% Fragments	MNE	Weight (g)	Weight %
Fragments ID to Species	7	8.44%	1	1.7g	16.5%
Unidentified Fragments	76	91.56%	17	8.6g	83.49%
Total	83	100%	18	10.3g	100%

Table 3. Total number of bone fragments, anatomical units (MNE) and the total weight identified to species (C95).

Context 111 Sample 32:

A total of ten burnt bone fragments (0.9g) representing one anatomical unit were identified within (C111) a deposit within [C79] a stone-lined post hole feature.

Due to a high degree of fragmentation the burnt bone fragments recovered from (C111) were not identified to species. The possible skull fragments (0.9g) representing one possible anatomical unit. All ten of the bone fragments recovered from (C111) were discoloured to white indicating exposure to a high level of heat. As detailed previously the structure of bone changes through exposure to heat. Contact of bone with heat diminishes its moisture content and results in the combustion of the organic or collagen component; the remaining structure of the bone after this process

is mineral. Such distortion to the bone structure reduces its size and alters bone colour

Group	No. Fragments	% Fragments	MNE	Weight (g)	Weight %
Fragments ID to Species	0	0%	0	0	0
Unidentified Fragments	9	100%	1	0.9g	100%
Total	9	100%	1	0.9g	100%

Table 4. Total number of bone fragments, anatomical units (MNE) and the total weight identified to species (**C111**).

4. Summary

One hundred and nineteen burnt bone fragments from various archaeological contexts on Site 101 02E1752 Littlemills 1 were submitted for examination. The bone samples were assessed and identified to species where possible. From these, a total of 112 fragments (94.12%) were not possible to identify to species due to the size and fragmented nature of the pieces. The remaining 7 fragments (5.88%) were identified and divided into species. The faunal remains assemblage contained bones from one recognisable species *sus*/pig. No definite conclusions could be drawn from the bone assemblage retrieved from Site 101 02E1752 Littlemills 1 due to its limited size and poor degree of bone preservation.

However, as detailed and represented in Table 5 a large proportion of the bone assemblage across all contexts displayed evidence of exposure of the bone to heat. These alterations of the bone are indication that the animals recorded on Site 101 02E1752 Littlemills 1 had most likely been cooked and the food debris was discarded and exposed to scavengers.

Species	Cut	% Cut	Gnaw	% Gnaw	Path	% Path	Burn	% Burn	Total
Pig	0	0	0	0	0	0	7	5.88%	7
Unidentified	4	100%	0	0	0	0	112	94.12%	112
Total	4	100%	0	0	0	0	119	119	119

Table 5. Number of fragments from entire assemblage with cut; gnaw marks evidence of pathology or burning/heat exposure.

Bone Database:

Site	Spec	C	S	Tax	Anat	Side	Prox	Dist	1	2	3	4	5	6	7	8	But	Bu	G	Q	Wgt (g)	Comment
101	1	107	17	Unid	Unid													W		9	0.3	Series of tiny pieces of unidentifiable, possible diaphysis/rib fragment of small mammal. White surface
101	2	95	31	Unid	Long Bone												Cut	G, W		3	3.6	Series of 3 small pieces which fit together, possible rib of medium-large mammal. Bone is distorted through exposure to heat. Also displays possible evidence of butchery in form of cut marks
101	3	95	31	Unid	Poss Rib												Cut	G,W		1	1.6	1 fragment, possible distal rib of medium mammal. Bone is distorted & shows surface cracking through exposure to heat. Possible cut mark on lateral side. Surface cracking also possible due to taphonomic processes such as trampling etc
101	4	95	31	Unid	Unid													G,W		1	0.6	1 fragment, possible mid-shaft fragment of rib of medium sized animal. Bone is distorted and shows surface cracking through exposure to heat or taphonomic processes
101	5	95	31	Unid	Unid													G,W		1	0.6	1 fragment possible mid-shaft fragment of rib of medium sized animal. Surface cracking visible heat or taphonomic processes
101	6	95	31	Unid	Skull													W		2	0.2	2 fragments of inner bone cortex, possibly skull.
101	7	95	31	Unid	Long Bone													G,W		9	0.1	Series of tiny pieces of unidentifiable burnt bone, possible diaphysis/rib fragment of small mammal.
101	8	111	32	Unid	Skull													W		10	0.9	Series of 10 tiny unidentifiable fragments of burnt bone
101	9	95	14	Unid	Rib													G,w		1	0.4	Single thin fragment of burnt bone rib of small mammal, poor condition
101	10	95	14	Pig	Ph		fsd								1	1	1	W		1	0.4	Incomplete distal phalange of pig. Bone in moderate condition
101	11	95	14	Unid	Rib								1					W		1	0.3	Mid diaphysis fragment of rib of small-medium mammal.
101	12	95	14	Pig	Metap			fsd								1	1	W		2	0.5	Two fragments of incomplete pig metapodial, metrics not possible. Distal end not complete.
101	13	95	14	Pig	Metap				1	1								W		1	0.5	Incomplete proximal pig metapodial. Inner cortex of bone exposed, poor preservation
101	14	95	14	Unid	Ph													W		1	0.2	Fragment of pig phalange, proximal.

101	15	95	14	Unid	Long Bone													W		1	0.5	Unidentified diaphysis fragment
101	16	95	14	Unid	Meta				1									G,w		1	0.2	Possible proximal pig metapodial fragment, grey due to exposure to heat. Cortex exposed
101	17	95	14	Unid	Long Bone													W		1	1.3	Unidentified diaphysis fragment
101	18	95	14	Unid	Long Bone													W		1	0.8	Unidentified diaphysis fragment
101	19	95	14	Unid	Long Bone													W		1	0.6	Unidentified diaphysis fragment
101	20	95	14	Pig	Ph											1		W		1	0.2	Incomplete distal phalange of possible pig. Bone in poor condition
101	21	95	14	Pig	Ph						1	1						W		1	0.1	Possible pig phalange
101	22	95	14	Unid	Long Bone													W		1	0.1	Unidentified diaphysis fragment
101	23	95	14	Unid	Long Bone													W		1	0.2	unidentified diaphysis fragment, grey to black at margins
101	24	95	14	Unid	Long Bone													W		1	0.3	Unidentified diaphysis fragment
101	25	95	14	Unid	Ph													W		1	0.1	Fragment of possible shaft of possible phalange
101	26	95	14	Unid	Skull													W		1	0.2	Unidentified to species skull fragment
101	27	95	14	Unid	Skull													W		1	0.2	Small skull fragment too small to ID to species.
101	28	95	14	Unid	Long Bone													W		1	0.1	Unidentified diaphysis fragment
101	29	95	14	Unid	Unid													W		52	0.9	Series of unidentifiable tiny burnt bone fragments.
101	30	95	14	Unid	Long Bone													W		10	2.2	Series of small-tiny long bone diaphysis fragments,

Key:

C= Context
S=Sample
Anat=Anatomical Element
Prox=Proximal
Dist=Distal

But=Butchery
Bu=Burnt
G=Gnaw
Q=Quantity of Pieces
G=Grey

N=No
Unid=Unidentifiable
Tax=Taxon
B=Black
wgt=weight

W=White
R=Rodent

5. BIBLIOGRAPHY:

Binford, L & Howell, F.C. (1981), 'Bones, Ancient Men and Modern Myths', Florida Academic Press Inc.

Boessneck, J. (1969), 'Osteological Differences between Sheep and Goat' in D. Brothwell and E. Higgs (eds.), *Science in Archaeology*, 331-358, Thames & Hudson, London.

Davis, S.J. (1987), *The Archaeology of Animals*. New Haven & London: Yale University Press.

Fisher J.W. (1995) 'Bone Surface Modifications in Zooarcheology' in *Journal of Archaeological Method and Theory Vol. 2 No.1*, Springer, Netherlands.

Grant, A. (1982) 'The use of tooth wear as a guide to the age of domestic ungulates' in B. Wilson, C. Grigson and S. Payne (eds.) *Ageing and sexing animal bones from Archaeological Sites*, 91-108, BAR 109, Oxford.

Haynes G. (1978) 'Morphological Damage and Alteration to Bone: Laboratory experiments, field studies and zoo studies', *American Quaternary Association 210*, Edmonton Alberta.

Hillson, S. (1992). *Mammal Bones and Teeth: An Introductory Guide to Methods and Identification*. London Institue of Archaeology: UCL, London.

Luff R. & Pearce J. (1994) 'The Taphonomy of Cooked Bone' in *Whither Environmental Archaeology*, Oxbow Books Ltd, Oxford.

Lyman R.L (1994) *Vertebrae Taphonomy*, Cambridge University Press

O'Connor T.P. (2000) *The Archaeology of Animal Bones*, Sutton.

Olsen P.S. (1988) 'Surface Modification on Bone: Trampling versus Butchery' in *Journal of Archaeological Science* 15, 535-559.

Reitz, E.J and Wing, E.S. (1999) *Zooarchaeology*. Cambridge Manuals in Archaeology, Cambrige University Press.

Schmid, E. (1972) *Atlas of Animal Bones for Prehistorians, Arhcaeologists and Quaternary Geologists*. Amerstadam, London, New York, Elsevier Publishing.

Silver, I.A. (1969) 'The Ageing of Domestic Animals' in D.R. Brothwell and E. Higgs (eds.) *Science in Archaeology*, 283-302, London.